ANNUAL HOME SECTION 32 Pages of Improvement Plans —Plus All Regular Features 35c Monthly Detroit's First 6 Engine

STOP TIRESOME HAND SANDING

with a

POWER SANDER

Gives a satin smooth finish to new or painted wood in a jiffy. Easy to use . . . fits snugly in the palm of one hand ... leaves other hand free to hold work in place. And sandpaper replacement is easy, too . . . no special tools needed. Assorted sandpaper and polishing cloth included.



- * Twice the Sanding * Convenient Fingertip Area of any sander in its price class
- Power Pocked-14,400 strokes e minute
- UL Approved
- On-Off Control
- · Positive Straight Line Action-never bucks or Iwists
- Guerontsed for IYear

Also available: Weller Electric Power (MODEL \$1895 Sanding Kit with Sturdy Metal Case 700KI





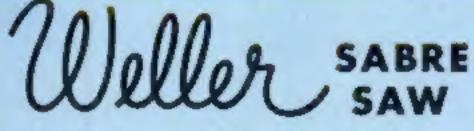
sands with grain



fits under low places



easy to use vertically

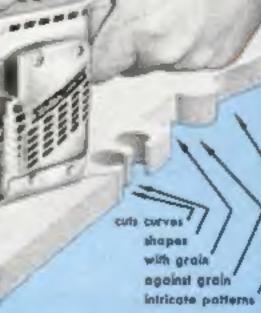




makes starting hole for inside cuts

Makes every kind of cut in many kinds of material. Cuts plywood, doit-yourself aluminum. composition board, plastics, etc. Guaranteed for I year. Fine and regular wood blades and metal cutting blade included.





WELLER ELECTRIC CORPORATION-601 Stone's Crossing Rd., Easton, Pa.

BEWARD

Sure as shootin', every man who smokes the new

PHILLIES. CHEROOT

WILL GET A GENUINE REWARD IN SMOKING PLEASURE!

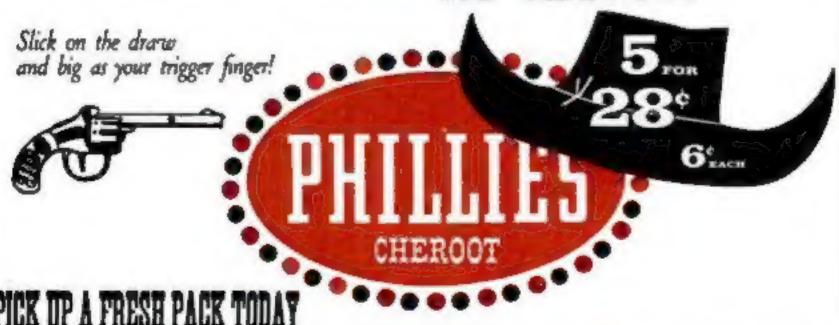
What's more, pardner, these



are MIRACILE MILLID

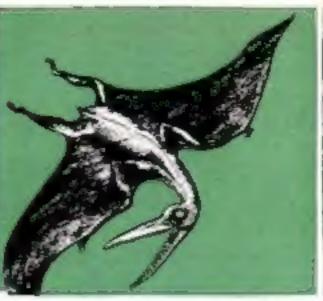
Why these cigars are as smooth and light as the sun settin' over the hills.

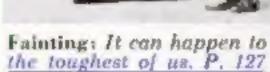
BUT DON'T GET CARRIED AWAY UNTIL YOU CARRY AWAY THE HANDY FRESH PACK OF 5 FOR 28 CENTS!











Founded in 1872 Vol. 175 No. 3

Sentember 1959

Mechanics and Handieraft and, to 6. par, ore.

Popular Science

SPECIAL FEATURES

achtenine, and	
Cover photo by W. W. Marris	Stopping the Bank Holdups 67
	The War Against Time Bombs 78
CARS AND DRIVING	This Dog Climbs Trees 92
Detroit Report 62	How a Stopwatch Works108
What Causes Turnpike Tie-Ups? 73	Where Everybody Jumps110
The Car That Needs No Greasing 82	New for Car, Shop and Home 114
Detroit's First V-6 Engine 94	Chariot Racers Risk Spills124
SCIENCE AND INDUSTRY	Is It "Chicken" to Faint?127
Do "Extinct" Animals Still Live? 84	DISCOVERIES AND INVENTIONS
Russia Shows Off Biggest Airliner 89	Scraper Walks Off with Hilltops118
Automation Speeds the Mail104	Turbofans: More Push for Jets 120
PICTURE NEWS	The Camera Made for Close-Ups148
Ground Skis Roll Over Slopes 72	AUTO UPKEEP
Airport Ferry Rides to Jets 76	Can You Beat These Mechanics? 154
Plane Goes Straight Up and Over 106	Gus Gets into a Smashup160
Cargo Cruiser is Outsized Wagon. 123	Hints from the Model Garage165

Editor: HOWARD ALLAWAY

Assistant Managing Editors
Kendall W. Goodwyn
Robert P. Stavenson
Senior Editors
Devon Francis, Martin Mana
Everett H. Ortner
Technical Editor
Hubert Luckett

Detroit Editor Ken Fermoyle West Const Editor Wesley S. Criswold Managing Editor FRANK ROWSOME JR.

Associate Editors

Ezik R. Arctander, Alden P. Armagnac Henty B. Comstock, Frank Dorr Sheldon M. Gallager, Eznest E. Hickman James T. Howard, Herbert O. Johanson Herbert R. Pfister, Joan Steen Buth Westphal

Editorial Assistants

Rosa Lee Beeland (Chief) Marie A. Brew, Anna Dallas Bebe Lipson, Roberta Marks Georgette Sparks Art Director HOWARD C. JENSEN

Art Editors

Herbert Anthony, Reginald A. Hawley Harry Samuels

Art Associates

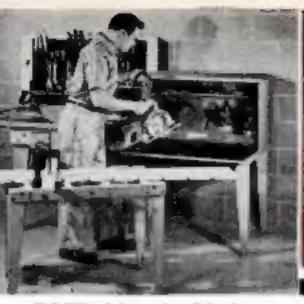
Bestrum Green, Eric A. Karminski Jr. Henry W. Kazmisowski, Richard J. Meyer Dane B. Rasmussen

Photography

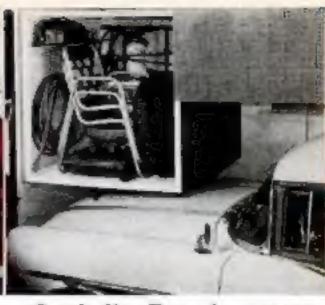
W. W. Marris (Chief) Robert D. Borst, Orlando Guerra

EDITORIAL OFFICES: 355 Lexington Ave., New York 17, N. Y.

2 POPULAR SCIENCE SEPTEMBER 1959







Catchall: For the garage space that nobody uses. P. 201

PS Workbench: Modern as a split-level house. P. 139

Mural TV: Easy ways to put the picture in the wall. P. 174

Monthly

America's Leading New-Idea Magazine for 87 Years

FOR HOME AND SHOP

Special Tear-Out Feature Workbench Blueprint.. Exciting Split-Level Workbench....139 New Clutches for V-Belt Drives.... 144 Old-Time Engine Refuses to Dic.. 150

SHORT CUTS AND TIPS	
Low Rod for a Child's Closet	143
Gauging Depth of Post Holes	
Tool Holder Made from Tubing.	
Quick-Removal Temporary Signs	_
Picture Is a Movie Screen	
Frame Raises Ceiling Board	.170
Washers Level Furniture	
Downspout Makes Lamp Post	
How to Refuel a Power Mower	246
Aligning Stair Treads	
Clas Rottles Store Developer	

HOME-IMPROVEMENT SUPPLEMENT New Projects for Better Living

How to Install Mural TV......174 Mower Port for Outdoor Storage 182 Garage Catchall..... 201How to Build a Bookshelf Desk... 208 Modern Way to Enclose a Porch. 218 Rumpus Room Pointers.....224 Rumpus-Room Plumbing Wall....226 5 Extra Uses for Stepladders......234 Bunk Bed Hangs from Ceiling....236

EVERY MONTH

PS Readers Talk Back	4
Have You Heard?	14
The Month in Science	19
I'd Like to See Them Make	
New Ideas from the Inventors	100
Wordless Workshop	

Publisher EUGENE S. DUFFIELD

ADVERTISING OFFICES:

NEW YORK-355 Lexington Ave. chicago-360 North Michigan Ave. parmoir-2810 Book Bldg. MAN PRANCISCO-114 Sansume St. CLEVELAND-636 B. F. Keith Bldg. LOS ANCELES-711 South Vermont. PORTLAND, ORE. - 520 S.W. Sinth Ave.

SUBSCRIPTION SERVICE:

Address all subscriptions and correspondence concerning them to: Popular Science Subscription Department, 355 Lexington Ave., New York 17, N. Y. Allow four

Advertising Manager LEE P. ADAMS

Circulation Director EUGENE WATSON

weeks' notice for change of address. Please give both old and new addresses, including sune numbers. Published monthly at 355 Lexington Ave., New York 17, N. Y., by Popular Science Publishing Co., Inc., Godires Hammond, Chairman of the Buard; Eugene S. Duffield, President; Franklin E. Parket Jr., Secretary: Eugene Watson, Vice-President; Robert D. Beals, Treasurer and Business Manager, Secondclass postuge paid at New York, N. Y. and at additional mailing offices. Entered as second class matter at the Post Office Department, Canada, Printed in U.S.A.

Copyright, 1959, by Popular Science Publishing Co., Inc. All rights reserved in the United States, Great Britain, and in all the countries participating in the International Copyright Convention and Pan American Copyright Convention, Single copy 35c, Subscriptions to United States, its possessions, and Canada, I year \$3.40 (2 years \$6.00, 3 years \$8.00). Elsewhere, I year \$6.00 (2 years \$11.00. 3 years \$16,00). Send notice of undelivered copies on Form 3579 to Popular Science Monthly, 355 Lex-ington Avenue, New York 17, N. Y.

PS Readers

TALK BACK



On Cars Without Wheels

We are completely and utterly pleased by your article on ground-effect vehicles ["Here Come Cars Without Wheels," July]. All of us here in Neponset are highly gratified that we lead the story in PS.

Here is a photo of the 72-hp. conversion of the Aeromobile. Its performance is good, but your observations on grade climbing and dust are accurate.

I believe with greater propulsive efficiency and more horsepower we will climb hills, but for now it's a flat-surface machine. Dust and spray can be conquered, too, with research.

W. R. BERTELSEN, M.D., Neponset, Ill.

Wheels," I was very much impressed with your illustrations. Could you send me several reprints of the article? I have found it a quick, handy guide to what is being done in the ground-effect-machine field today.

GABRIEL D. BOEHLER, Pres. Aerophysics Co., Washington.

Wants to Re-Cast Dice

I HAVE access to a lot of discarded dice from the gaming tables of this city. They're perfect ¾-inch cubes, made of a plastic that can be easily cut or drilled. Thus far, they've only proved useful as souvenirs. Can anyone come up with ideas for some other uses?

RUBIN LEVINE, Las Vegas.

Tip for Car Owners

OTHERS may be interested in a dodge I find prevents mix-ups at the gas pump when various family members use the car. I mark the cap of the fuel tank with the

grade of gas I take—Sun 200, Esso Extra, or whatever. I use fingernail polish to print the letters, but masking tape and a ball pen would make changing easier. I find it such a good idea I wonder why gas companies don't issue printed stickers.

J. B. UMHAU JR., M.D., Chevy Chase.

On Beating the Radar

THANKS for the exposé of currently popular systems for beating speed checks ["Why You Can't Fool the Radar Cops," May]. After listening to many drivers extol their pet gimmicks, I am satisfied that they are—as I suspicioned—pure bunk.

A. J. REPAR, Barberton, Ohio.

ed. No, sir. The steel rails are nailed to wooden cross beams and the wood rests on the road bed. In effect, the steel never touches the ground and is insulated from it by the wood.

JAMES ANDERSON, Santa Rosa, Cal.

Railroad tracks are connected to ground at various points—unintentionally—and the tracks are used as "ground" in railway communications systems.

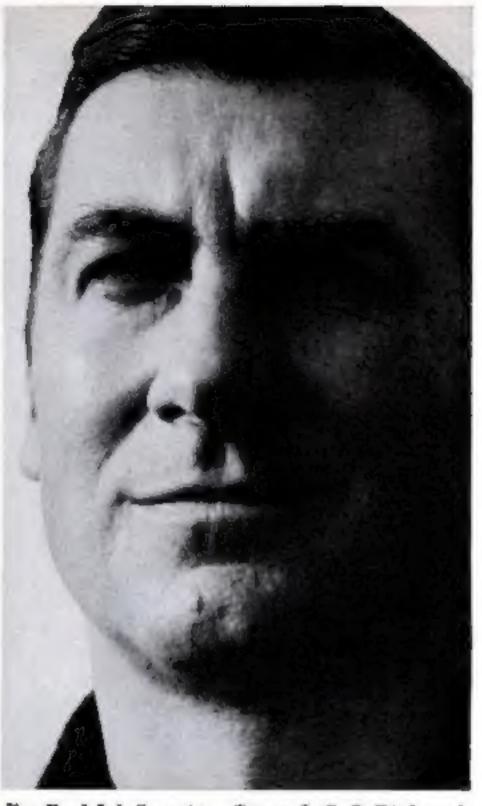
... I'm for radar. I think this is the only way speed arrests should be made. Had I been timed by radar instead of by a young trooper out to make a name for



himself, I would have been clocked at 55 instead of 65 in a 45-m.p.h. zone—and my fine would have been \$15 less.

T. T. WOOSLEY, Bristol, Tenn.

... The combination of a rather low outline and a fiberglass body seems to make the Corvette somewhat immune to



For Real Job Security-Get an I. C. S. Diploma!

IT TAKES A REAL MAN TO WIN AN I.C.S. DIPLOMA!

Here's training for the man who can take it "straight"—without the fancy trimmings.

With I.C.S., your "classroom" is your home. Your "laboratory" or "shop" is the place you work. Every minute you spend is productive—no commuting, no long-winded discussion groups, no waiting for slower students to catch up.

You gauge your progress not by marks and grades alone but by pay boosts and promotions. And these are likely to come fast.

This is the most demanding kind of training. You select your own subjects, set your own pace, apply what you learn to your own specific needs—all while holding down a full-time job and possibly supporting a family.

Is it any wonder that men who can win I.C.S. diplomas often turn out to be leaders in their fields? I.C.S. has more of its former students now in supervisory and management positions than any other school.

It takes a real man to win an I.C.S. diploma. And the first step is mailing the coupon. Such a simple act sounds easy. Actually, it's the one thing that separates the "planners" from the "plodders." If you're the man we think you are, you'll mail the coupon NOW.

I. C. S., Scranton 15, Penna.

Accredited Mambur, Halipeal Home Study Council

INTERNATIONAL CORRESPONDENCE SCHOOLS BOX 97641J, SCRANTON 15, PENNA. (Partial that of 250 populars) Williams cost or obligation, used one "NOW to SUCCEED" and the opportunity bushlet about the Hald BEFORE which I have murhed X (plan sample beaus); AVIATION Aere-Engineering Tucknology Aircraft & Engine Mechanic ARCHITECTURE and BUILDING CONSTRUCTION CIVIL ENGINEERING Civil Engineering Construction Engineering Cood English Nigh School Mathema High School Science Short Story Writing **Industrial Electronics** Practical Radio-TV Engris Air Conditioning Architecture BUSINESS **Aprile-TV** Bervicing Highway Engineering Professional Engineer (Chril) Reading Struc, Blueprints Sanitary Engineer Accounting LEADERSHIP Arch, Drawing and Advertising Sesiness Administration Business Management RAIL ROAD Car Inspector and Air Brake Dieset Electrician Industrial Foremenskip Designing Building Contractor Building Estimator Corporary Builder Corporary and Millwork Car Inspector and Diesel Electrician Diesel Engr. and Fi Diesel Lecomolive Industrial Se Personnel-Li Supervision Industrial Separation Personnel-Labor Relations **Cost Accounting** Structural Engineering Diesal Engr. and Firemen Spreaying and Mapping Creetive Salesme Managing a Small Business MECHANICAL DRAFTING Corporter Fernance and SHOP Distal Engines Cas-Elec. Welding Industrial Enginee STEAM and DIESEL POWER Professional Secretary Aircraft Drafting Public Accounting Architectural Orafting **Fainting Contractor** Purchasing Agoni Drafting & Machine Dr D Seeding Arch. Stusprints D **Electrical Orafting** mr Plant Engineer Stationary Dissai Er Stationary Firemen Industrial Instrumentation Salesmanship and Medianical Drafting Sheet Metal Drafting Stationary Diesal Engr. Industrial Metallurar ANT Commercial Art Magazine Illus. Management Industrial Salety Truffic Management Structural Orafting Machine Shop Practice Mechanical Engineering TEXTILE Carding and Spinning Section Manufecture CHEMICAL ELECTRICAL Bestrical Engineering Elec. Engr. Technicism Elec. Light and Power Show Cord and **Analytical Chemistry** Sign Lettering Sketching and Painting Professional Engineer (Mash) Chemical Engineering Chem. Lab. Technician Elements of Ruclear Energy Quality Control Booting Elsap Blue Befrigerallus and Cutton Warping and Weaving Leon Fixing Technician Textile Designing Textile Finishing & Dyoing AUTOMOTIVE Practical Electrician General Chemistry Return Gas Prod. and Trans. Practical Lineman Air Conditioning Auto Body Rebuilding and Refinishing Professional Engineer (Elec) [] Tool Design [] Tool Making Petroleum Prod. and Engr. Professional Engineer (Chem) Throwing Auto Engine Tuneup MADIO, TELEVISION General Electronics Tech. Warping and Weaving Warston Manufacturing HIGH SCHOOL Pulp and Paper Making High School Diplome Ante Technician **Working Hours.** Constitut resignate need atoms in international florescenteres fictions, Canadian, Ltd., Montreet. Ourspetier Canada. . . . Special low resettily builties roles in members of the U. S. Armer Forces.

CRESCENT ADJUSTABLE WRENCHES



Crescent offers unequalled value, performance and selection in Adjustable Wrenches. Choose CRESTOLOY for greatest strength and finest finish in 4" to 24" sizes; CRESCENT for toughness and durability at lesser cost in 4" to 18" sizes. Both lines in single and double end patterns. Also insulated handles on the 12" CRESTOLOY, and CRESTOLOCK, the new locking adjustable wrench.

Sold by hardware dealers everywhere.



Crescent is our trade-mark, registered in the United States and abroad, for wrenches and other tools. Sold by leading distributors and retailers everywhere and made only by

CRESCENT TOOL COMPANY, JAMESTOWN, N. Y.

radar. What happens is that the signal is attenuated on passing through the fiberglass (it won't reflect) and again when reflected from the small car's metal parts. The combination so limits the return-signal level that the receiver may not accurately track its frequency shift.

This peculiar situation could be eliminated, of course, with a more expensive radar installation.

J. L. WEIDENFELD, San Antonio.

Blows His Lid

ONE of the five budget savers [June] says if wax-base shoe polish crumbles or breaks up, hold the can over a low flame on the stove until the wax melts. I tried it and it worked like crazy. The pressure built up inside the can, the lid blew off,



and the stove was showered with messy shoe polish.

Friend, you forgot to remind us to take off the lid.

BILL GOLDMAN, Van Nuys, Cal,

What's in a Name?

Just read the interesting piece on the Mercedes ["Royal Family of Cars," June] and must point out that the pronunciation you give is incorrect. In German, a C before a vowel is pronounced the same as the Z which, in turn, is pronounced like the English TS (as in pets). Thus, the word is Mer-tsay-dis.

HARRY JABLOW, Jackson Heights, N.Y.

The pronunciation we gave (Mer-saydis) is the one recommended by Mercedes importers to ease linguistic downshifting in the U.S.

. . . I'm afraid you'll have to eat your words on the Mercedes.

You say the only U. S. engines that can match the 220 S (in horsepower per cubic inch) are Cadillac's Eldorado, Chrysler's 300E, De Soto's Adventurer. How about the '57 Chevrolet's one horsepower per cubic inch, or 290 horsepower

atisfied with my PRESENT PAYCHECK?

NOT ME!!

DAY, you are probably earning enough to get by—enough to ovide your family with life's necessities, and perhaps you are positing a few extra dollars in the bank,

BUT are you content with just earning a living wage? Do you "Someday I'll really get a break and go right on to the top." IAT'S WISHFUL THINKING!

You know that the "breaks" go to the man or woman who is epared to take advantage of them—to the person who can fill better job and who is worth more money. He makes the reaks" instead of waiting for them.



PO YOU QUESTION YOUR OWN ABILITY?

ere is a field of business which has never on overcrowded—it's the ACCOUNTING ELD. And the demand for skilled accounts—men and women who really know their siness—is increasing. State and Federal legistion requires much more efficient accounting m business. Corporations are in constant of of expert counsel in matters relating to diting, Cost Accounting, Business Law, and deral Income Tax. Men who prove their alifications in this important branch of business are promoted to responsible executive positis are promoted to responsible executive positis—given an opportunity to earn real salaries. It is a real salaries are range in \$5,000 to \$10,000 a year—even to the income figures.

WHY BE SATISFIED WITH YOUR PRESENT JOB?

ny accept mediocre pay when right in your in home you can acquire the necessary trainto advance rapidly in the profitable, growfield of Accounting.

Under the LaSalle Problem Method you can uire a thorough knowledge of Accounting, ster its fundamental principles, become pert in the practical application of those

AIL THE

DUPON

DDAY

VER 4,500 CPAs

Y THE LA SALLE

ROBLEM METHOD

VE BEEN TRAINED

principles—without losing an hour from work or a dollar of pay.

Your training will be under the supervision of organization and management specialists, Attorneys and Certified Public Accountants. Preliminary knowledge of bookkeeping is not necessary. We train you from the ground up—Basic Accounting right on up through the Certified Public Accountant training.

50 RIGHT NOW-TODAY

If you are ambitious—if you are interested in a high-paying career—investigate the opportunities in this profitable field.

FREE SAMPLE LESSON

Decide today to send for LaSalle's Accounting Lesson Number One, also FREE book, "Opportunities in Accounting." In it you will find complete information on the opportunities which are open to those qualified, and you will learn how you can prepare yourself for a better job and more money. NO OBLIGATION. MAIL THE COUPON TODAY.

ACCREDITED MEMBER, NATIONAL HOME STUDY COUNCIL

FIFTY YEARS OF QUALITY TRAINING

-----SEND FOR FREE BOOKS



LaSalle Extension University

Dept. 983H, 417 S. Dearborn St., Chicago 5, Ill.

Please send me, free of all cost or obligation, Free sample leason, and your illustrated book, "Opportunities in Accounting."

Name	W	+	P		ņ	p-	+	*	+	P	7	+	,	4	*	4	7	-	-		•		-	-		.A	£10	Þ	4 4	

Andreni

City, Zone, State.....

7

Make More Money Soon **Fixing Electric Appliances**

Train at Home in Spare Time



Better Pay—More Opportunities

Get into a field where there is important work and opportunity for the trained man. Millions of electric appliances are sold every year. Every wired home now has an average of 8. Many of them need service and repair. Owners pay well to have them fixed quickly, properly. This is your opportunity for a better job, your own part time or full time business, NAI can give you the training you need, at home, in your spere time.

Spare Time Earnings Start Soon

Soon after starting you will be able to earn extre cash fixing tonsters, clocks, fans, vacuum cleaners, etc., for neighbors and friends. Keep your job while learning and earning. Put spare time to work for you. Work in your basement, garage, spare room. You'll be amased how easily, quickly you, too, can start earning many extra dollars. NRI shows you how. Even before you finish training your spare time earnings may pay for the course and equipment.

NRI Sends Tester to Learn and Earn

You need proper equipment to service today's automatic appliances.

With this course you get parts to build professional type, multi-use Appliance Tester. You learn to use it. Takes guess work out of servicing. Mail coupon for FREE took and Sample Lesson. See how use it is to learn. Find out about NRI a school that for more than 40 years has been training men, through notice study, for success, good pay jobs. Our reputation, record, experi-ence back up this course. Write new to NATIONAL RADIO INSTITUTE, Dept. BJD, Washington, D. C.



NATIONAL RADIO INSTITUTE

Send me Lesson and Book Free. No Salesman will call.

Name-----Age-----

Address

City......State......State..... ACCREDITED MEMBER NATIONAL HOME STUDY COUNCIL

A POPULAR SCIENCE SEFTEMBER 1959

from 283 cubic inches with the optional Duntov cam? Indeed, the Arkus Duntov GM Corvette pulled 310 horses from 283 cubic inches with tuned exhaust.

D. Holmes, Port Credit, Ont.

Anyway, It Floats

Your conclusion that induced electromagnetism will suspend an aluminum disk in a magnetic field, even though aluminum is CYLINDRICAL nonmagnetic-"Readers Talk Back," June] is true. However, you were wrong in assuming that this is the way the aluminum disk in an electric meter is suspended.

The magnetic bearing in an electric meter uses the attraction between two permanent magnets, one attached to the meter frame, the oth-

-GUIDE PIN CYLINDRICAL MAGNET ON FRAME ALUMINUM DISK

er attached to the shaft of the alumi-GUIDE PIN num disk (see diagram).

J. H. PARSLEY, Meter Foreman, Texas Elec. Service Co., Ft. Worth.

Better Read It Again

One thing puzzles me about hydrofoil boats ["You Can 'Fly' Your Own Outboard," June]. If the speedboat is lifted as much as two feet off the water, don't you need a special shaft on the motor? It seems to me the outboard wouldn't even touch the water if the boat were elevated that much.

JAMES HOSKINS, Williamstown, Mass.

You're right. As mentioned in a caption, a standard shaft extension is necessary to keep the prop in the water.

Dream Comes True

WAY back in 1955, I wrote to you suggesting the use of sightseeing submarines at a proposed World Fair in Florida. Imagine my surprise one day this week



Firestone tires pass the world's toughest trials on the world's fastest tracks.

Firestone proves why in the 7 toughest types of testing!



Firstions tires give you the safety and mileage you need for today's turnpikes.

CHAMPION ON TRACK...AND TURNPIKES, TOO!

Test-proved Firestone Rubber-X* is the best-proved material in tires.

Only Firestones are tough enough to pass every blazing trial in all meen types of tire testing—on speedways, turnpikes and proving grounds, in city driving, on gravel and dirt by-paths, over twisting mountain grades and on roasting desert roads. Firestone combines scientific testing in complex laboratories with all-weather research on every type of road and on Firestone's 170-m.p.h. test track, the fastest in the world. To measure tires for safety, stability, mileage and other factors that affect your driving, engineers run them for millions of miles under calculated conditions of tire-torturing extremes. Such research helped bring you speedway-proved S/F (Safety-Fortified) cord—and Firestone Rubber-X, the longest-wearing rubber ever used in Firestone tires. Since it

costs no more to get best-proved Firestone tires, why take less or pay more? Buy them on convenient terms if you wish at your nearby Firestone Dealer or Store.

*Firstone Rubber-X is compounded opeeifically for each type of Pirestone tire



Copyright 1959, The Firestone Tire & Rubber Company



HP means High Pay

to men who are trained in

Auto Mechanics

Now it's easy to learn quickly at home

"America is short 100,000 auto mechanics," a famous mechanics magazine reports. "America needs 25,000 more auto-repair shops," a noted motor executive announces. Pay is tops In larger cities, it averages \$3.00 an hour. Steady work is assured: Two-thirds of America's 62 million vehicles are in the "heavy-repair" class.



Why let the lack of training keep you from a better job, higher pay, and lifetime security? No matter if your education is himited—no matter how long you've been out of school—it's easy to learn Auto Mechanics at home in spare time. And, you can earn as you learn—many students do.

C.T.I. will train you in: Tune-Up and Overhaul; Electric, Cooling, and Lubricating Systems; Power Steering: Power Brakes; Automatic Transmissions; Clutches; Axle and Chasis Repair; etc. But get all the facts from two booklets we have ready for you. Be sure to mail coupon foday for your free copies.

Get Experience Using Tune-Up Kit & Tools







CTI sends you a Tune-Up Kit, the kind that skilled mechanics use to locate engine troubles. You receive a compression Tester, Vacuum Gauge & Fuel Pump Tester, Ignition Timing Light; portable steel case. You also get mechanic's tools, including socket set, You acquire experience using hits,

DIESEL MECHANICS OR BODY-FENDER REBUILDING in yours at no extra cost. Only CTI offers this extra choice You get fully-rounded training in all phases of mechanics.

Many Students Earn Money as They Train

by taking part-time jobs in local shops or fixing cars "on their own." Many make enough to pay all tustion and buy extra equipment. Some open abope, become independent.

Get Facts Now-Decide Later MAIL TODAY

Your future is worth looking into. Get facts on job and business opportunities. Mail coupon today—Commercial Trades Institute, Chicago 26, III



COMMERCIAL TRADES IN	TITUTE
1400 GREENLEAF AVENUE DEPT. A-1148 CHICAGO 26, ILLINOIS	
Malf me your two appartunity booklets: Big Manay in Auto Mechanics, and Sample Lesson. Both FREE.	
NomeAge	
Address	A
City ZoneState	

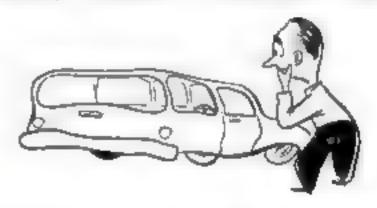
when I picked up a newspaper and saw an ad illustrating just such a submarine It's now in use at Disneyland.

J. P. ZAMPINI, NYC.

Trade Lingo Throws Him

KEN Fermoyle in his Detroit Report [July] says the Ford people are trying to make next year's Lincoln look "crisper" than the present one. Just what does this mean?

I know that the auto companies use the term in their promotions, along with a lot of other gibberish, but what does PS mean by the word? I'm anxious to know



whether my old ('56) Plymouth station wagon is crisp or whether it has started to wilt.

C. A. RAMBOW, Madison, Wis.

In the lexicon of designers, crisp is believed to mean clean lines, giving a look that depends on configuration and not chrome ornamentation.

A Chance for a Quick Sale

For months I've been looking for a machine that was well known only a few years ago, but can't be found now.

What I'm looking for is a Forbiseder—the only machine that can do really good slotsching work. High-priced models had the very useful gasporator attachment. When used with a three-way gasometer, it was one of the most useful machines in any all-around shop.

R. BLACDEN, E. Hampton, Conn.

Surveys show that Forbiseders are rare. Have you thought of using a hard appleseeder? It does a good slotsching job without a gasporator and the three-way gasometer was just a luxury anyway.

Europe's Feriac Clutch

ONE of the June letter writers aaks what happened to the [Eaton] electromagnetic clutch. By coincidence, the foreign-car quiz in the same issue men-

GENUINE KORIUM STEEL HUNTING KNIVES

NO. 820 MONARCH

Nearly 10 Inches long.

Dramatic reindeer scene deeply etched right into blade.

Super workmanship you'd expect in a knife costing \$10 or more. Only 88c plus 12c for sheath. Total \$1. Order No. 820

Cut Thru Metal!

Genuine Karium knives—sharp enough to place

Genuine Karium knives—sharp enough to pleres some metals! Never before sold at such unheard of low prices—now yours for 88c each! Save even more! Buy ALL 5 FOR ONLY \$3.95! This sensational bargain available only from Thoresen, Inc., 585 Water Street, New York 2, N. Y.

VALUES TO

\$3.95

HELEN OF TROY

Rare work of sculptor's art.

Nearly 10 inches long Color of antique gold with torsa of Helen of Troy Eyefilling design but rugged enough for taughest usage, Only 88c plus 12c for sheath. Total \$1. No. 84



NO. 122 Sportsman

One-piece construction extremely shorp Korlum steel blade. Especially good for animal skinning. B½ inches, Formerly sold for \$2.98 Easy-grip handle has a good "feel" to it BBc plus 12c for sheath, \$1. No. 122

7x35

ORIG. ADV. AT \$24.95

898

FREE Case, Strap, 4 Lous



We've seld over ONE MILLION bineculars, but this is our greatest value? 7:35 Bineculars. Orig. adv at \$24.95 e-years for only \$8.98 plus tax! Highest optical crafts-manship, COATEO larges, Made of east motal with public grain, jut black covering, Center from, Rugged yet lightweight. Excellent flight transmission permits views in moonlight? Plastin case, shoulder straps, four fees prefectors included? No. 171 7:35 Bineculars \$8.00 plus 80c Federal tax, TOTAL: 19.88.

One Year Guarantee!

Thorosen backs its producted If, within one year after purchase, any one of these knives proves defective, we will replace the knife with a brand new one.

Special!

88¢
WEIRD
HARAKIRI
KNIFE

MADE IN THE HIGHEST TRADITION OF SAMURAL CRAFT

Here's the world foreous cruffed keiffe in the highest Samuros tra-High dition. corbon steel. losot shorp blade, Hand decorated handle, matching ornomentol wooden sheath. 10 in-THAL HOW-88c plus 12c sheath. No. 183.

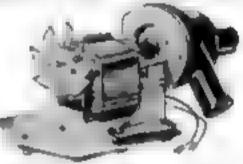


World's most famous hunting knife—thousands sold for \$3.981 Nearly 10 Inches long Thick Karium steel. A wanderful wall and den decaration, too. Keen, sharp enough to share with, Only 88c plus 12c for sheath. No. 76

CENTRIFUGAL PUMP & MOTOR

Pumps to 500 G.P.H.

944



Purchased of price BELDW THE COST TO MAKE! Some were run an hour or two, many never used. ALL in perfect condition, Drain Seeded saliers fact—pumps up to 500 pallons per hour! Greate waterful! for rack garden! Filter water in publ. Irrigate farm land, THERMAL OVERLOAD protected—scevents meter from burning out! 130 volls, 60 cycles. AC. Rugged, heavy-duly construction. Fan cooled, Fump & Mater only \$8.44 plus 550 in defray heavy peetage. TOTAL. 33.59.

THORESEN,	Inc.,	Dept.	7-K

585 Water Street, New York 2, N. Y.

Rush items below on 10-day home trial with money back guarantee.

Check, such or money order enclosed.

Send COD plus COD fee & Postage Costs.

No-	Quantity	Arnele	Price
		_	

MANG

ADDRESS

Constitute Will King St. West, Terente 2B. Ont.

LEARN RADIO-TELEVISION ELECTRONICS

Servicing or Communications



Fast Growing Field Offers Good Pay—Bright Future

Bigger than ever and still growing. That's why Radio-TV Electronics has special appeal. The technical man is looked up to. He does important work, gets good pay. Keep your job while training. You learn at home in your spare time. NRI methods have proved successful for 45 years; can provide training quickly.

Add to Your Income Soon \$10-\$15 a Week Extra in Spare Time

"I was renairing Rad in by 10th Less n. New have good TV inb 'M R Lindi meth, Firt Wayne ling.

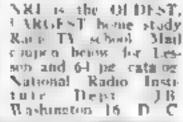


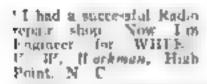
many NRI students earn \$10-815 n week earn fixing sets. Equipment NRI gives you brings to life things you study



"Doing spare time repairs on Radio and TV, to be into full time serv using soon." Clude Higgins. Wa tham, Mass.

Find Out What NRt Offers







tions the Ferlac magnetic clutch used on Renaults. It utilizes a suspension of iron particles in oil congealed by an electromagnet run off the generator.

Dr. R. B. STEIN, S. Pasadena.

Don't Lean on It

THE reader who wants an aluminum tent ["I'd Like to See Them Make," June] claims it would reflect the sun to make a cool shelter. I've been handling aluminum irrigation pipe for some time now. After this stuff lies in the sun for a while it gets so hot you can't touch it without gloves.

KIRK STAPLER, Denton, Tex.

Our Bulging Earth?

Nor all scientists agree that the earth has a "slightly pinched" northern hemisphere ["The Month in Science," May].

Geologist J. Lamar Worzel of Columbia University says the northern hemisphere actually bulges out in places. His findings are based on gravity measurements made over the oceans.



During a satellite's trips around the earth, the effects of gravity are averaged. As a result, says Dr. Worzel, some details of shape may be missed

BILL MITCHELL, Los Angeles.

More on How to Start a Nail

THE letters on driving nails without splitting the wood encourage me to add this bit of lore:

Reverse the nail on the work and hit the point hard enough to set the head in the wood. This cuts the grain. Then drive the nail through the center of the mark made by the head.

MAX MULLER, Sacramento.

New Trick for an Old Cat

OUR cat, Chipper, is smarter than Tang and Gorgon ["A Door That Pets Can Open," June]. He can open doors with no gimmick at all on them, as long as they're unlatched. Now if I can just eliminate the claw marks on the doors, I might invest in Mr. Corey's gimmick and set up a training course for Chipper.

You'll soon be happy in a great new job...

...earning BIG money...

... If you start training NOW for success in

AIR CONDITIONING AND REFRIGERATION

You could be earning top pay in months. It's mostly a matter of getting your training now. Your best bet is to be



a mechanic in the air conditioning and refrigeration field. This industry is growing so fast that 20,000 newly trained mechanics are needed each year. Over 150 million units are in use; over 5 million new air conditioners, freezers and refrigerators are sold annually. Skilled men are desperately needed for installation and repair work. Be a mechanic! Mail coupon for free success booklets on CTI's amazing new Home Training Plan.

You can earn cash during your training

Because CTI training is so practical, you'll soon be making profitable service calls. Perhaps you'll work on your own. Or, you may prefer to get a part-time job with a local appliance dealer or air conditioning contractor. You can add to your present income this way. With extra cash, you can buy additional shop equipment, pay your tuition, even bank money.



You could go in business and be independent

Own a business—and enjoy independence! Thrill to the estimation of being the boss. Give orders—not take them! The refrigeration field is ideal for getting started on your own. You can make friends as you make service calls. In time, you'll have a list of potential customers. You can also sign service contracts with food stores, taverne, restaurants, etc. Ever so many CTI graduates have their own successful shops. Most of them began with nothing more than their new training and pluck. You, too, can start small and grow hig. Be a business man!

You could get into the profitable new auto air conditioning field

Hundreds of thousands of new cars are being equipped with air conditioners. Auto dealers are advertising for skilled refrigeration mechanics, offering premium pay, to set up service departments. Or, you can go in business for yourself, and contract with auto agencies to do this type of installation and repair. You can make big profits either way.

00 00 00

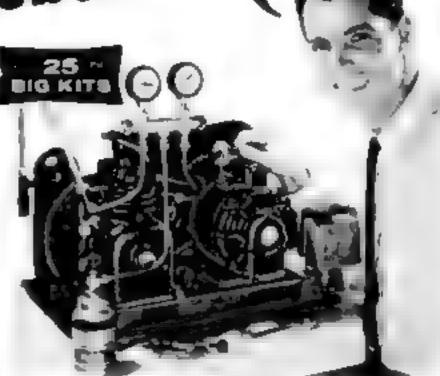


This is the home of CTI, one of the world's great home study schools. Through this Institute you receive "training you can trust." Over 40,000 career graduates from coast to coast.

COMMERCIAL TRADES INSTITUTE
1400 Greenbef Avenue - Chicago 26, Bineis

FIRST GET THE FACTS—THEN DECIDE Muil Coupon Today for 2 Free Booklets





You learn fast because you practice with real equipment — Get experience

You train at home in spare time. No need to give up your present job; no need to leave home to attend a resident school, CTI sends 25 kets of parts and tools to build a heavy-duty, commercial-type, ½ h.p. refrigeration high-side (illustrated above.) You do 10 trouble-shooting and service jobs—it's almost like field training!

After assembling and working projects with your unit, you may build an air conditioner, refrigerator, freezer, or milk cooler. All parts and tools are sent without extra charge—they are yours to use and keep.

You get all these quality mechanic's tools



You get special "tools of the trade" as part of your training. Included in a pressure gauge, vacuum gauge and besting manifold. You'll use these tools to assemble and test the condensing unit. Thus, you get not just tools—but equipment to practice with. (Why settle for one without the other?)

You must look into your opportunities

Thousands of CTI graduates (and students) tell us they are getting better jobs, carning more money, working steady. Many are going in business. It is surprising how many report the best benefit of all is that they gained self-confidence. With so much at stake, can you afford to neglect your opportunities? Isn't it worth a few minutes of your time to find out? Just fill out and mail the handy coupon! Be sure to act today.

COMMERCIAL TRADES INSTITUTE CHICAGO 26, HARMOS Dept. 2-637 Send on your two appartually booklots, Success in All charing & Befriperation, and Leasen Sample. Soth PRES. Name Address City. Tage. State

...have you heard...?

Pay-as-you-see TV will be tried out in the Toronto suburb of Etobicoke late this fall. It'll be a closed-circuit cable system initially planned to reach 10,000 homes. It will be set up and operated by Trans Canada Telemeter, a division of Famous Players Canadian Corp., Ltd., which owns a big chain of movie theaters. Telemeter hopes to sell the idea to other communities in the U.S. and Canada. The main sales points:

You pay a flat \$5 installation fee

for the telemeter unit. That's the only fixed charge.

 Otherwise you pay cash—and only for what you see.

 You can switch from the pay channel to a free one and back again.

 The price you pay will vary with the quality of the program.

 You'll have three programs to choose from on the one pay channel.

The system is broad enough to func-



tion as a community station, screening local events, as well as offering such meaty fare as up-to-date movies and championship sports events.

A compulsory fallout shelter? Grim though it sounds, it's possible that you may be required to build one by law. Government planners have issued a booklet called "The Family Fallout Shelter" that offers five plans along with the basic furnishings needed. One of the designs is a do-it-yourself basement project.

What are the "basics"? If building a shelter becomes compulsory, the necessary furnishings will be spelled out carefully. They'll be aimed at making the space livable for a period of at least two weeks.

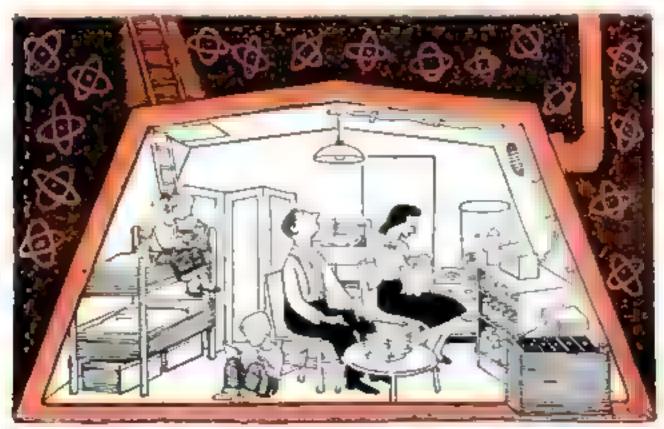
Planners figure a family of four could be housed in a room with a seven-byseven-foot floor area. That allows a little more than the 10 square feet per person considered a minimum for comfort. "Basics" will include beds, food, water, sanitation facilities, lighting and a radio.

Toughest problems to crack are the psychological ones. First, the lack of privacy in a confined area. Then the sheer boredom.

Industrial designers Lippincott & Margulies, planning interiors for the atom sub Nautilus, fought the lack of privacy

by trying to give each person something of his own. Every sailor had his own storage cabinet, reading light, bulletin board and radio earphones.

To alleviate boredom, the designers experimented with variations in lighting. Both incandescents and fluorescents were used. Switching different ones off and on at intervals helped convey a feeling of the passage of time.



You can install this beautiful wall



Free brochure shows how

This is the exciting new Panelok wall by Jasonite. Notice all the items suspended in it. They require not one nail or screw! They are supported by hidden metal lock-trips between the 2' x 8' Masonite* hard-oard panels. This means you can arrange my of the items in seconds...change a whole soom at will! And there's an Adjust-A-Bilt* coessory (planters, racks, cabinets, etc.) or almost any use.

1 Four Exciting Colors. Beautiful Royalcote® rained finishes in Musty Walnut, Rosé,

Antique and Champagne come in handsome grooved patterns. They add a rich warmth to room settings, enhance any decor. Panels also available unfinished and without grooves.

Free Brochure. We will mail you, free, a Panelok wall system brochure showing how easily you can install this exciting paneling—at half the cost you would expect to pay! Panelok and other Masonite hardboards are at your lumber dealer's. Send the coupon today.

♥Reg. T.M. U.S. Pet. Off. by L.A. Darling Co.



MASONITE

	-CORPO	DRATIC	O N
	6 Mosonite Corporation	n-man facturer of que	ty paner products
Masonile Corporation Dept. PS-9, Box 777,			
Send free brochure ill	urtrating Pineluk wal	l system,	
Name			*****
Address			
City		State	+
Zone	County		

...have you heard...?

Both noise and the lack of it are problems in cramped-quarters living The continuous hum of an air conditioner can give shelter occupants an entombed feeling but so can the complete absence of noise.

One suggestion is to play tapes on a battery-driven machine that would simulate the normal sounds of living: a refrigerator going on and off, the sound of

traffic; wind whistling through the trees.

Color can help, too. Spaceship models have been made that use blue for the ceiling, green on walls, beige for the floors. Not only do they suggest the outside world of nature, but for space travelers they're a reminder of which way is up. In one such setup five volunteers lived contentedly for five days in about as much room as you'd find in a station wagon.

The last word on stains comes from a Department of Agriculture publication. Its title: "Home and Garden Bulletin



No. 62, Removing Stains From Fabrics (Home Methods)." You can get it free by writing the department's Office of Information, Washington 25, D. C.

Besides covering the classic or oldtime stains, the new edition explains how to deal with modern ones. Among them: ball-point-pen ink, antiperspirants, plastic hangers (they mark clothes), plastic buttons (they sometimes melt into clothes) and some of the newer glues.

Chlorine appears both as stain and stain remover. It yellows some of the newer finishes on cotton, but works fine as a bleach on the older fabrics.

Mustard, of all things, turns out to be the toughest stain—it can never be completely removed from fabric. Lipstick is dismissed as fairly easy—though liquid detergents have replaced glycerine as the proper cleansing agent.



How many Russians are there? The Central Board of Statistics in Moscow made an official count last January. The results, along with sundry other "facts," are interesting to look at:

- The population is 208,826,000—split 55 percent women (115 million), 45 percent men (94 million). World War II losses are still reflected here.
- While 25 cities have populations of over a half a million, only three have

more than one million: Moscow (5,032, 000), Leningrad (2,888,000) and Kiev (1,102,000).

- Over the last 20 years, urban population has risen from 60 million to 100 million.
- Russia claims the highest marriage rate in the world—more than 12 a year per thousand population; the lowest death rate—7.5 per thousand; and a high birth rate—25 per thousand.

Two tones are better than one. Driving 60 m.p.h., you can see a two-tone car coming toward you a half-mile farther off than a solid-color car, Dr. Harvey Cohen of the Vision Conserva-

tion Institute told fellow optometrists.

Tests made by the Institute over a three-state area showed the two-color vehicles were at least 20 percent easier to see than cars painted a solid color.

INVENTORS

Learn how to protect your invention. The U. S. Patent Laws provide that any new and useful art, machine, article of manufacture, or composition of matter, or any new and useful improvement thereof, may be patented if the act of invention is involved. Therefore, every inventor with a valuable invention should take advantage of the Patent Laws and proceed for patent protection in order to safeguard his rights.

A patent gives the inventor the exclusive right to prevent others from making, using, or selling the invention claimed in the patent for a period of seventeen years.

The Patent Laws were enacted for the benefit of the inventor to give him protection for the features of his invention which are patentable. These features must be properly and concisely set forth and claimed in a formal application for patent, in order to comply with the requirements of the Patent Laws. For that reason, unless the inventor is familiar with patent matters, he should engage a competent registered patent attorney or agent to represent him. We are registered to practice before the U. S. Patent Office and are prepared to serve you in the handling of your patent matters.

A specially prepared booklet entitled "Patent Guide for the Inventor", containing detailed information with respect to patent protection and procedure, together with a "Record of Invention" form will be promptly forwarded to you without obligation upon request.

CLARENCE A. O'BRIEN & HARVEY JACOBSON

Registered Potent Attorneys

92-J DISTRICT NATIONAL BUILDING WASHINGTON 5, D. C.

GET READY FOR THE SPACE and SCIENCE ERA! SEE SATELLITES, MOON ROCKETS CLOSE-UP

See the Stars, Moon, Planets Close Up! 3" ASTRONOMICAL REPRECTING TELESCOPE 60 to 100 Pewer-Famous Mt. Palomar Type! Am Unusual Buyl



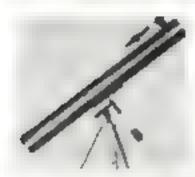
Assembled Ready to the Your nee the Kings of Saturn, the facel nating planet Mars, hince craters on the Moon, Star Clusters, Moone of Jupiter in detail. Galaxies Equatorial mount with lock on both axes. Alumnized and over costed 3" diameter high speed 1/10 mirror. Telescope coincided amounted literior lens giving you do to 160 power Low cost accumory eventees available for accomory eyepteon available for To seppe a says at exemple to a sepperation of the sepperation of the

CHART 4's) 272 page Banthook of Heavens. \$25.4\$ postpoid

KNOW THE TRUTH ABOUT POWER Telescope on auditor Telescope will easy will easy the shall as to well to about 50 of a later per rich of other very affection to an appropriate of a later to one above the air president empty inappresentation—these viewing dam difficult and adjusticiactory

41/4" ASTRONOMICAL TELESCOPE

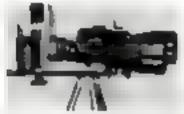
TO POWER)



If the this scripe work can see except on a as abuse hit with gr aver power plus will ap I filter stars. Mirror has twice the gat gathering power. M troi guaranteed Hack and gip in focus ng hardwester per cas eight outs another the storm a limit of that see store A are sported to be a proper final problem for 2 stored and mige or proper a shall be one on this we have go or all powers and the maximum of the and and are source or pass and able for higher power. Free hand book as a trac 4 spring war 2 he had been No. 65 006 N \$74.50 To b.

Same Telescope as above but equipped with Electric Clock Drive-\$141 50 to h forribation, N J. Stock No. 85,094-N

BINOCULAR-TO-CAMERA HOLDER For Exciting Telephote Pictures



Reing h a rector himes heary with a 13 him him or a 243 to come a distinct SEN 825 to come a distinct

311 30 Postonid Stock No 70.223-N

8 POWER ELBOW TELESCOPE WAR SURPLUS

\$200 Gov'l Cost-Only \$13.50 Sig a objector forming 50 oct 28mm form in months the cereming as the tarm tarm months are the top to a start form in region and the top to a start form in region to the top to a start form in the form of the f \$13.50 Postpard Block No. 70,173 N



Take Telephoto Shots Thru

7×50 MONOCULAR

This is one push to American number to structure the war sure to the and the first to the structure to the s Stuck No. 50 003 N



and to ske for a by the prison of the ske chare have out at the large per a leave to a street matter as block their dest \$15.00 Pentpaid

GIANT MAGMETS! TERRIFIC BARGAINS!

Wat Surplus Amico V type Horseshoe shape Trehards one of the power 5 th age fare when A 4 B 2% C 43 16" D- 4" E 4" Strongth is about \$ 000 Gauss, West Litt F- 1%



Stock No. 70. (83 N \$8.50 Postpald . 17% th. alse. Approximately 5,000-4,000 Game fating. Will lift over 450 Illia

Stock No. 65.086-A Blopping wi. 22 .bs

\$22 50 F B R Barr Bet in N

SPECIAL! SPECIAL! Terrific Buy! American Made! **OPAQUE PROJECTOR**



Projects Illustrations up to 8" x 3\2" and enlarges them to 4 ft, wide, No fi.m or negatives needed. Projects charts, diagrams, pictures, photos, lettering in full color or black-and-white. Operates on 115 volt. A.C. current, 6-ft extension cord and plug included. Operates on 60 wait bulb, not included

Size 12" x 8" x 4 2" wide Weight 1 lb., 2 oz. Plastic case with built-in handle

ASTRO COMPASS AND STAR FINDER

Gov't. Cost \$75—Price \$14.95 Pstpd. Determines position of stars quickly Shows various celestial coordinates, An

extremely maeful star finder which can be rotated through 80° angles along calibrated degree scale. Has single eye lens with viewing stop two spirit levels for aligning, tangent series with scale for five precision readings, azimuth scale graduated in two-degree intervals, adjustable tilling azimuth scale for angle reference of stars on distant objects. War Surplus. Gov t CH81 \$75 Instructions, carrying case tacluded.



Stock No. 79,200-N

Only \$14.95 postenid

WAR SURPLUS!-INFRARED SHOOPERSCOPE Covt. Cost \$700—Rargain at \$37.50

Converts afford to visible light See in total darkness with ut being

on two flashlight batteries (not included) Image is quite good, may be made even better by careful fo-cusing. Size 11 2 x 8". Weight with carrying case 12

INFRARED LIGHT SOURCE AVAILABILITY! You will need a 6 volt transformer or 6 V auto battery to operate

Mfcch, No. 80 035 N

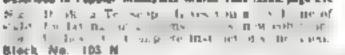
\$10.00 Paled.

BUILD A SOLAR ENERGY FURNACE

t fast having new field. He id your own Bulge Furnace C. Am menta for many potential uses have in spensive the securps self We for each nativest me. The state powered formace at a most bereite heat \$100 " to 3000" Prices enamet to metal. Sets paper affirme to recogifs Use our Presnel Lens: 14% dameter ... f l. 14"

Stock No. 70-130 M. Frence Lenn. Man. 55.00 Patps.

HAND SIGHTING LEVEL Described in People Machines March 1954 (same page 212)





\$2 50 postpold

FREE CATALOG-N

100 Pagest over 1000 Bergainel

America s No. 1 son ce of supply for experimenters. cosine to spiritate of tetranomical Tenescope parameter to a line of temporal modern of decemporal and a spirit per temporal for a later to see a statistic per temporal a literature to spirit a statistic personal and spirit se in speciment time math ion many and reachand division



REQUEST CATALOG-N

ORDER OF STOCK NUMBER . . . SEND CHICK OR MONEY ORDER . . . SATISFACTION GUARANTEED!

The month in science

Crackdown on amateur rocket shoots? The American Rocket Society, which is to space travel what the American Medical Association is to health, has come out flatly and officially: "The launching of rockets by amateurs must be prohibited. Any loss in [students'] opportunity for intellectual development . . . is small compared with apparently unavoidable and appalling losses of eyes, fingers and lives."

(This statement is a remarkable instance of a reformed sinner's excessive piety: Only 20 years ago the ARS itself was 100 percent amateur. If amateurs here and abroad hadn't kept rocketry going despite professional ridicule during the Twenties and Thirties, satellites and moon probes would still be science-fiction fantasy.)

There is no question that rockets are very dangerous. The ARS



reports that, in just five months this year, four amateurs were killed. In a sample period of only six weeks, an estimated 162 were injured, many of them seriously. Anyone who has seen the elaborate precautions that are routine among professional rocketmen is bound to be horrified by the non-chalance with which some teen-agers—and even high-school teachers—mix viciously unstable chemicals, pound them into metal cases and apply matches.

Still, is flat prohibition the remedy for this?

There are doubts:

- ▶ Small rockets can be made from materials that are easy to get, so prohibition would be harder to enforce than traffic laws.
- Adventurous amateurs would be compelled to experiment secretly, which means without any expert supervision. And that means increased danger.
- Youngsters heading for science or engineering should be encouraged—not discouraged—to experiment.
- ▶ Progress might well be hindered, since outsiders frequently come up with the really brilliant new ideas. (It wasn't physicians who discovered disease germs and the antibiotics to kill them.)

The serious hazards involved in rocket experiments obviously call for strict control. In some communities, you need to get a permit—after proving you know the safety rules—just to burn the leaves you rake off your lawn. Surely similar but tougher regulations could keep rocketry within bounds. And no one is better qualified to spell out the necessary controls than the Rocket Society's own experts.

War in space. It looks as if the earth is through as a major battlefield. Any future fighting is likely to occur far out in space, between armadas of satellites and rocketships. The warriors who wield these weapons will be in space, too, controlling them directly and not by pushbutton from land.

That's the look ahead given by the director of the Pentagon's

The month in science

Advanced Research Projects Agency, Roy W. Johnson, in newly released testimony to Congress. Johnson's points:

► We cannot store our defenses—bombs and missiles—on earth much longer because there will be no place to hide them, either

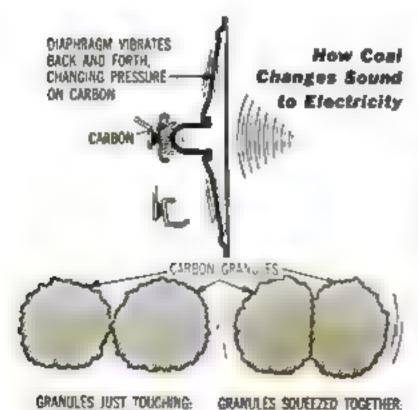


on land or on water. Satellites are already able to watch and report much of what we do (see July, "U. S. Space Fence on Alert for Russian Spy-Satellites"). Within 20 years, possibly even 10, the entire globe will be under constant surveillance by all major countries. The Russians will know every time a truck convoy moves here, and we'll be counting barges on the Volga.

- The vastness of outer space is an ideal hiding place. Fleets of missiles and stockpiles of bombs could be dispersed there with nearly zero risk of detection.
- Innocent-appearing satellites, even ones in more or less plain sight, could carry bombs as easily as they can carry research instruments or observation gear.

This is why the heat is on to get real live men into space. Piloted space craft will be needed to maintain and operate the far-out weapons systems, a job too difficult to do via electronics from Earth. Policing the satellite orbits is another job for men. They could rocket up to a strange bird, look it over for bombs and, if necessary, knock it down.

One possibly happy result of this military leap into space: War need not endanger earthbound civilians, at least not directly. It would be a return to the old days—the actual fighting would be restricted and remote, and only the ultimate victory or defeat would affect the folks back home.



LOW RESISTANCE

HIGH CURRENT

HIGH RESISTANCE,

LOW CURRENT

Electric finally used up the 800 tons of carefully mined, hand-picked anthracite it bought 30 years ago-to make carbon granules for phone transmitters-and last year had to go out and buy another batch. The coal (from the Mammoth Vein near Hazelton, Pa.) goes through a long and finicky process before it is ready for use. It takes 30 tons of coal to make 31/2 tons of carbon granules, but that's enough to fill 9,000,000 telephone transmitters.

Telephone coal. Western



being manufactured each year

N.T.S. Trains You RIGHT, FAST and EASY!

Incomplete, "Short-cut" training limits your earning power, even a squarfies you for toppay jobs, NTS, gives you All Phase, complete training . , . to qualify you for any job in your field, for greater profits all year round. - ONE LOW TUITIONS

Other LOWER COST schools make several courses aut of the material in each one of our MASTER COURSES

and charge you more for less training then you get In any one of our "Big 2"

IN FORMATION WILL BE MAILED ... NO SALISMAN WILL CALL!

GET THE BENEFIT OF DUR OVER SO YEARS EXPERIENCE

Choose YOUR Field! Select one of the "Big 3" NOW!

MEDIDENT TRAMINO AT LOS ANGELOS Il you wish to take your training in our Resident School at Los Regules. start NOW in our big. and Labo, Here you work



MODE SIL PROMINING SK., MIN ANNING SIL FRINC'S S. S.

MAIL NOW TO

National Technical Schools, Dept. C-99 4000 S. Figueroa St., Los Angeles 37, Calif

Please rush FREE Book and Actual Lesson checked below. No obligation. No salesman will call.

(CHECK ONE ONLY)

	"WY	S ALTERIS	HO TY	-MAGIN	-Electro	DILLICE.	4000	
	"My	Future	in Au	to Med	Nemeck	& Dies	iac E	Spo
- 1	"My	Future	In Air	Condit	anning.	Refrig	erati	noi
- &	Elec	trical /	lpphar	nce" B	ook			
						_		

Marrie			Age	_
Address				
Crty	Zone_	State		
Clar Miles				

VETERANS Give date of discharge

YOU CAN PLAY



ANY INSTRUMENT

a single note of music now!

I MAGINE! Even if you never dreamed you could play you can soon surprise your friends with your number ability



No special talent or previous training needed Clear, simple directions tell you exactly what to do, so you can't go wrong Spend a few more test a day—and only a few cents per lesson. Teach yourself plane, guitar, according, organ, any instrument. Play popular mione, hymny, classical, any other music by note, quality Over ONE, MILLION students have taken up induce this famous way, including TV Star Lawrence Welk

Stop Cheating Yourself of These Joys!

Popularity! New friends. Gay parties Good times. Career. Extra Money . appreciate converse about music Learn lives and compositions of modern and great masters . . Relax! Banch wornes and frustrations. Satisfy self-expression, greative arge. Cam self-confidence.

MAIL COUPON FOR FREE BOOK

See for yourself why our method has been successful



for 61 years! Read the whole fascinating story of this wonderful method in 36-page illustrated book, For FREE copy, mail coupon.

U. S. School of Music, Studio A159, Port Washington, N. Y.



_	CHOOL OF MUSIC A159, Port Washington, N. Y.
Please	send me your 26 page Blustrated Free Book I as
ablerester	Ush phosing (name instrument)
☐ 1 ifa	☐ 1 do NOT—have instrument now
Yµme	please print!
Address	the second control of the second control of
City	Zone State



cuts, rips, bevels, mitres, dadoes, cuts compound angles — everything expected of saws costing four times as much, Depth of cut adjustable; O" to 2's" — table always level, Send check or M.O. \$2.00 deposits on C.O.D 's.

SPECIAL BARGAIN — This saw is our 1959 model. Each saw is brand new — sent to you in factory sealed cartons. Sold and guaranteed direct from the factory to you at a fantastic bargain.

FREE 10 DAY TRIAL - MONEY BACK GUARANTEE

Try this famous saw 10 days. If you are not satisfied that it does the work of any tilt arbor saw, regardless of price, return for immediate money back refund.

Sent Express Collect

We reserve right to refund money if stock is exhausted

AMERICAN MACHINE & TOOL CO.



Re sure Portin Shack has millions of mail order rustomers. He is River pet trait offer as immore its urder neouning to the per or new items!

A lite a openin inclusione passed pring to flaulo bright in the arms of our Bergain Biller or and Record I year to be a new to be about this had mad the coupon.

	PARIO SHACE Corps 750 Commenwealth Ava., Boston	ration 17, Mass
	Figure and my	P.,
۱	FEEE Surgain Indiction for 12 Marshs	
1	FREE Recent Rivers for 12 Manuful.	Check
	The last the same the control of the	O M CO

COMPLETE SUB-TO ELECTRONIC

fronte cutulog, braved

in Saptumber

INVENTORS

If you believe that you have an invention, you should find out how to protect it. The first step is to have a search made of the prior pertinent U. S. patents. If a report on this search indicates that the invention appears patentable you can apply for a patent, and the specifications and claims should be prepared.

The firm of McMorrow, Berman & Davidson, with offices in Washington, D. C., is qualified to take the necessary steps for you. We can make a preliminary search on your invention, advise you whether we think it can be patented, and prepare your application for patent.

Unless you are fully familiar with the U. S. Patent Laws, we recommend that you engage the services of a Registered Patent Attorney to protect your interests. The patent laws are your laws. A patent gives you the right to prevent others from making, using or selling the invention claimed in your patent for a period of 17 years.

Use these patent laws for your protection. Investigate whether your invention can be patented. If you have what you believe to be an invention, we suggest that you have this firm make a search for you.

Send for a copy of our Patent Booklet entitled "How To Protect Your Invention," containing information about patent protection and patent procedure. Along with this we will also send you an "Invention Record" form, for your use in writing down and sketching details of your invention. We will mail them promptly. No obligation. They are yours for the asking.

McMORROW, BERMAN & DAVIDSON

Registered Patent Attorneys

PATENTS · COPYRIGHTS · PATENTS
1427 VICTOR BUILDING, WASHINGTON 1, D. C.



Why were these men great?

How does anyone-man or woman-achieve greatness? Is it not by mastery of the powers within ourselves?

Know the mysterious world within you! Attune yourself to the wisdom of the ages! Grasp the inner power of your mind! Learn the secrets of a full and peaceful life!

Benjamin Franklin, statesman and inventor . . . Isaac Newton, discoverer of the Law of Gravitation . . . Francis Bacon, philosopher

and scientist . . . like many other learned and great men and women . . . were Rosicrucians. The Rosicrucians (NOT a religious organization) have been in existence for centuries. Today, headquarters of the Rosicrucians send over seven million pieces of mail annually to all parts of the world. Address: Scribe J S.W.



THIS BOOK

The ROSICRUCIANS

San Jose

(AMORC) California, U.S.A.

FSEND THIS COUPON
Scribe J.S.W.
The ROSICRUCIANS
(AMORC)
San Jose, California, U.S.A.
Please send me the free book, The Mastery of Life, which explains how I may learn to use my faculties and powers of mind.
Name
Address
City
State

only 27 months for engineering degree

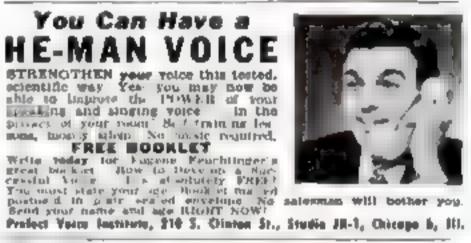
Realize your dream of becoming a graduate engineer. Then promotion will not pass you by. Share rewards awaiting coless men . . , higher income . . , rapid advancement, Important firms visit Tri-State campus to Interview sentors, Approved for veterans. Backelor of Science Degree in 27 months in Electrical Engineering with either Electronics or Power major

a so in Mechanical. Civil Chemical Aeromatical Engineering. In 36 months a B S in Business Adoun stration (General Business, Accounting, Motor Transport Management majora). For earnest capable students, Small classes, More professional class bours. Well-equipped, new and modernized

buildings and labs. Modest costs. Year round operation Enter Jan , Mar , June Sept Write J. F McCarthy, Director of Admissions, for Catalog and Career Buck.



You Can Have a





time business! Course teaches fiberglassing, model building and how to make molded, cast, internally carved colored plastic jewelry, toys, furniture, novelties, signs, Professionally prepared. Used by Industrial Arts Teachers. All materials furnished. For men and women.

Accredited Member National Home Study Council SEND FOR FREE BOOKLET

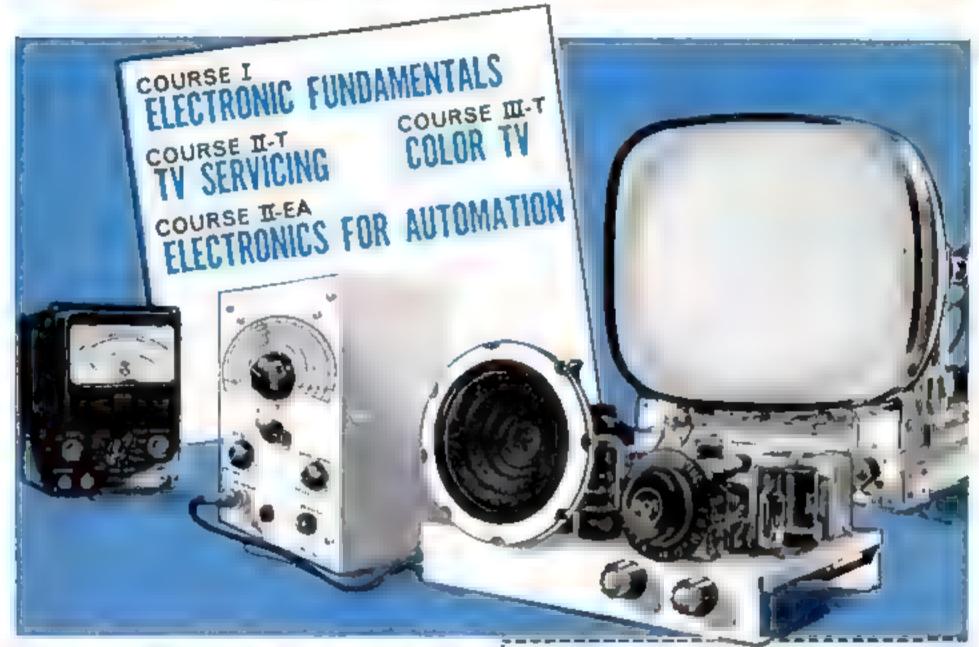


INTERSTATE TRAINING SERVICE Dept. C-2, Portland 12, Oregon Send Free Backlet on Flostics Home Training Course

name i . Ea name kini airi jogit po	tionic training contra,
Nome	

State.

OF HOME STUDY TRAINING



The equipment illustrated and text material you get with each course is yours to keep. Practical work with very first lesson. Courses for the beginner and the advanced student. Pay-as-you-learn. You need pay for only one study group at a time.



SEND FOR THIS FREE BOOK NOW

Resident School courses in New York City offer comprehensive training in Television and Electronics. Day and evening classes start four times each year. Detailed information on request.

RCA INSTITUTES, Inc. Home Study School

A Service of Radio Corporation of America 350 West Fourth Street, New York 14, N. Y. Without abligation, send me FREE 64-page CATALOG on Home Study Courses. No salesman will call.

Nome.	Please print	***********
Address .	* **! *!!	
City	.Zane State	
Koreon Vetsi Eni	ar discharge date	
CANADIANS -	Take advantage of	these same RCA

CANADIANS — Take advantage of these same KCA courses at no additional cost. No postage, no customs, no delay. Send coupon to:

RCA VICTOR COMPANY, LTD. 5001 Cote de Liesse Rd., Montreal P. Que.

To save time, paste coupon an pastcard

It's Like Having Factory



Experts Right Beside You...

SHOWING YOU HOW TO FIX ANY PART OF ANY CAR

New - Whather You're a Beginner er an Expert Mechanic - You Con-"Breeze Through" Any Repetr Job-QUICKLY — EASILY — RIGHT!

T HERE'S ONE SURE WAY to that's to get the advice of a real auto appeal MOTOR S Auto Repair Manua, brings you this execut word ance from the engageers in a same the cars and know them I inside out Yes, you get the know-how from bolied down into one glant volume!

No guesawork! MOTOR a Manual "atarts from scratch leads you through entire job with easy step-by-You CAN'T go wrangt hi w-to

1,720 BIG PAGES-2,850 PICTURES

Now. Revised, Superced Educate com-ple of several 1987. The strike are for mendels — from a le faite at to stripping pour body des these I are thank Forces 2 850 The self of Piccoppes 15 Quickoffeck Charts in the series of the part special after a

Same Free

Offer on

NEW TRUCK RIFAIR

MANUAL Covers avery Joh on every popula-

Minute Care the selection little made source 140d plan CM

Mark and Cum-

Buicto Arlgeo, p.

par appe miles of the part of I SHERTING MILE file by specially of 2 m may y to be pully of 30 mm y to be required as a pully of 30 mm and the pull of the pull

to the bland for a down of the state of the FAST but says and and and restly says again to the book of discounts >



10

A TOWATEC



More than 2800 tures make every attent easy as ARC 28410



MAIL COUPON NOW FOR 7-DAY FREE TRIAL (Attach to posteard for fast action)

MOTOR SOOK DEPT. Desk 929, 230 W. 55 St., New York 17, N. Y. Rush to me at once (check hox opposite book you want)

moton 3 New Auto Repair manual. If the first transfer of 5 to 12 to 12 to 12 to 13 to 14 to 15 to 15 to 15 to 15 to 15 to 16 t

cash with inder)

Print Same Age Address

. Zone State . City Check box and ages 42c defectly charge by enclosing W 15t drageth it et et pe en re payment of \$7.93 for the Sepair Manual of \$9 for Truck Repair Manually Same Auth Repair Manual in retarn refund privilege



from Wo as Largest Stamp Frm the Most Spectacular Offer Ever Made! 115 different genuine foreign postage stamps in all — includes World's Largest and Sma ast stamp PEUS fantastic conjection of other stamp freaks. Weird designs, gliftering colors, peculiar shapes - many from strange mysterious ands in remote corners of the world - from Aden to Zanz barl PLUS Grant Bonus co lection of a li-different stamps from other fasc nating and exciting parts of the globe. EXTRA! Big Barge n Catalog Collector's Guidet other stamp offers for free consideration, Send (Oc for me ling. ACT HOW) SEPT. F-18. Bouton 17, Mass.

经出售帐户 经工作的 化氯甲酚 化二甲酚 化二甲酚酚 WITH BENESHOUSE PAINT PEN

DECDRATE Part time. Jeterory A via B k 4, place I blanch, Boats, Toya, Linchronse, Wast Boar I, etc.

PAINTS on wood, plans, plantic, ceramics, metals failth and but on the ony cells part give transcent leavile paint or underguay become clean productional decoration has

No cook or smear. MASTER Simple 2 16 or Sir pe Model DROES NOW D rest or From Your Degree Only 5125 Other acoust string models: 1 84" | 13" 1 61" 5 64 2 32" 1 N° only 21 75 ca C Sue each Pairs 1,4 Cp 21 20. Extra time

Section Complete for \$500 (Pen and all 7 lips) Only Bingle Line

And admit the base of et in the in FOR PEALERS! First total a te setter at there is a spray we be for to be well a details

PAINTERS, CRAFTSMEN Professional with the little saver.

Double Stries Modelmer & combination \$3.26 C D Ø Poslage Collect. WENDELL MFG. CO., 4234 LINCOLN AVE DEPT. 263



want 36 to 40 MORE MILES

from every tankful of gas?

Schil today for your FREE copy of The Tatt TH About Furt Pres the remarkable back of written by engangers in every lay language that to uf or the first time one of the causes of poor was mucage and how you can red is do something about it D senver what a feet pressure

reg , afor to lind ou how a somple formula la inexpensive, but prec son trust med device ex ed MILES MASTER cur put be to 10 gas on a money hark guarantee' Learn how you can put un end forever to flood by vajer took hard starts how only \$6 45 and minutes time can amouth rough id ng and reduce gumning of piston rings and valves.



The 3-m-1 Leadership Fuel Pressure Regulator

MILESMASTEN, MIC. Dayst 196 1550 E. 74th Pt., Chicagn 18, 41.

NOW AVAILABLE FOR EUROPEAN CARS, TOO! Mail this coupon with your name and address in margia. Money Sock Guerantes.

WITH A. FUTURE Z. LEARN CHOOSE THE PROFESSION

JOIN THE SPACE AGE ENGINEERING TEAM!

You, too, can become a key man on the modern engineering team. The draitsman is the vital communication link between engineers and technicians. All commercial projects start on the draftsman's drawing board!

COMPLETE EQUIPMENT FREE OF EXTRA COST

HERE IS YOUR CHANCE! No matter where you live . . . no matter what your present job is . . . you too, like many of today's industrial leaders, can use draiting as your spring-board to success. Never before has there been such a demand and respect for skilled draftsmen. No profession has a brighter future! Droitsmen get top pay . are in line for promotion to executive posi-HONE.

AT HOME ... QUICKLY ... EASILY ... IN SPARE

NO EXPERIENCE NEEDED. C.E.I.'s modern drafting courses are the Enest. proctical, thorough bome study training available. They are fully illustrated, prepared especially for Home Study.

EARN WHILE YOU LEARN! Keep your present job while learning draiting at home in spare time Many students, as they advance in their C.E.I. course, use their drafting skill to increuse their present income.

ACT NOW! INSURE YOUR FUTURE! C E.l.'s localty of licensed engineers and registered architects will guide you such step of the way. Find out how a C.E.I. Diploma can open doors for you . . . bring you a richer life . . . greater security . . . big pay . . , the respect of your emplayer and people in your community MAIL THE COU-

You Too, Can Have:

- MORE MONEY
- PROFESSIONAL RATING
- BIG PAY JOBS
- BRIGHT FUTURE
- JOB SECURITY
- * SUCCESS

C E I, a Orafiling Course has helped me in many ways, It has rolled my education rating and technical class fication and has boasted my in-COMP.



1. F. Solichun, Canal Zone



C E I - Home Study Course made it postible for me to secure volumble training while keep ny my full time lob to meet living ex-

penses CE | fraining mode my present job post-bie and doubled my pay

Wm. M. Willie, lowo

I odvise everyone interested in the highly spe-Colized Reid of drafting to stort your top coliber course of once/ CEI course has increased my



income 92% The certing of the solory and pention of experienced draftemen is untimited.

Paul W. Macrone, Flo.



Your course has made my present position possible. If has also enabled me to study engineering in cotloge evening courses, My copied in place of kigh school credits C.E.I. diploma was ac-

1. Johnhamer

These are only a few of hundreds of letters of

VETERAN APPROVED

NDD **LESSON** AND SUCCESS BOOK



Approved Ohio State Dept. of Education

ENGINEERING DRAFTING EXC

Cleveland 3, Oble 6300 Euclid Ave.

DEPT, PS-93

Mechanical ☐ Aeronautical ☐ Architectural

ADDRESS CITY ...

No Obligation - No Salesmen

A-2327

prepare for your career in

ELECTRONICS ELECTRICAL ENGINEERING RADIO-TV COMPUTERS

At MSOE, you can equip yourself for a career in many exciting, growing fields: MISSILES - RADAR - AVIONICS AUTOMATION - RESEARCH DEVELOPMENT - ELECTRICAL POWER - ROCKETRY

When you graduate from the Milwaukee School of Engineering, you are prepared for a dynamic career as an Electrical Engineer or Engineering Technician. Under a faculty of specialists, you gain a sound technical education in modern, completely equipped laboratories and classrooms. As a result, MSOE graduates are in great demand and highly accepted by industries nationally.

At MSOE, you will meet men from all walks of life and all parts of the country — some fresh out of high school or prep school, others in their twenties — veterans and non-veterans.

You can start school in any one of four quarters and begin specializing immediately. Engineering technicians graduate in 2 years with an Associate in Applied Science degree. For a Bachelor of Science degree in Engineering, you attend 4 years. A 3-month preparatory course also is available.



FREE CAREER BOOKLETI

If you're interested in any phase of electronice, radio or television, he sure to look into the programs of study offered by the Milwaukee School of Engineering. Just mail the coupon.

MILWAUKEE SCHOOL OF ENGINEERING

Dept PS-959, 1025 N. Mihraukee St. Milwoukee, Wisconsia

Pk	lease send FREE Career Booklet. I'm i	colerested in
	Electromes Electrical Power	Television
	Mechanical Engineering [Radio [Computers
	Electronics Electrical Power Mechanical Engineering Radio Electrical Engineering Industrial	Electronics
	ELEAGE ORDER	

Name	 	 	Ag	 _
Address.	 	 	 	

City. Zone State

I'm eligible for veterans education benefits

MAIL ORDER

FREE
Publication
SHOWS
YOU
HOW

Get your FREE COPY of "How to Make Money in Mail Order" revealing plans on how and where to get best products to sell by mail—how to pocket profits in advance—how to get free ads. Men, women, families, start your own big profit home mail order business without experience or product investment. New Mail Order Exchange plan helps beginners start. Confidential bulle-

tine show you products to sell by mail, show newest sure-fire mail order techniques. Write today for your FREE COPY of "How to Make Money in Mail Order." There's no obl. ratios. Air mail reaches us overnight.

There's an obligation, Air mail reaches us overnight, MAIL ORDER EXCHANGE 1717 Westwood, Dept. X-249, Les Angeles 24, Calif.

WANT MORE MONEY?

Coast to coast, high paying jobs in photography are waiting for people with that "know-how" to fill them. You can quickly eastly quality of

home with the world-famous NY Learn by Daing Method. Write today for free catalog Also resident training in N. Y. Our 50th Year, Approved for Veterans

NEW YORK INSTITUTE OF PROTOGRAPHY
Dept. 5 10 West 33 St. New York 1, N. Y



... Swiss or American

Unique Sweetey System starts you making repairs right away. Develops your shift step by-sirp Teaches simplified modern shop methods professional short suit. Learn by spare time home study from professional trade school. Low forms. From fessional trade school. Low forms. From fessional trade school. Low forms. From fessional trade school. OF WATCHMAKING

2330 Milwaykon, Dopt. 499, Chicago 47, III.



SUPER JU JITSU

Now get tough double quick!

A custom of the same has at appropriate Light?

The stop on of the same has at appropriate Light?

At any one of the same and that the Desperous?

These plant of a same stop of the Desperous?

These plant of a same basis for the period of the period of

SERVICING RADIATORS!

— 5 does Radiator Stop 5 does Mont

that or east at the with new intated a Piece

that ator 5top East to test in ear and repair

yar ators in and world a arges enpaner

that it refrains you have for the first starts you have for the first starts you have for the first starts and world a arges enpaner

than I refrains you have for the first environment of the starts and write for free information

at well responsible dept first and the starts of the starts and the starts are started to the starts of the starts and the starts are started to the starts of the starts are started to the starts of the starts are started to the s

BEFATCLAIM INVESTIGATOR



INVESTIGATE ACCIDENTS!

Many corning \$750 to \$1000 a menth. Thousands of insurance companies, steamship lines and Government Offices need Claim Investigators. Also big apportunities for your awa spare time business. We train you at home. National Placement Service FREE of extra charge. Bill King writes: "Your course has paid off for me with large carnings. You can quote me your Adjuster Training Course is worth many times the cost." Write TODAY for FREE book.

INIVERSAL SCHOOLS

University Park, Dept. PS-9, Box 8202, Datlos 5, Texas

BUY DIRECT FROM DISTRIBUTOR - SAVE UP TO 75%



One of our BEST Values! I 2.9 AMP HEAVY DUTY 1/4" RAM DRILL

with Josebs Geored Chuck & Key

Ash any expert and he'll free \$19.95—Our Price \$14.95 plus see ps. 4 help. \$14.95 plus an ord.nary 2 2t, or 2th asp unit but a powerful hell 2 \$2 AMP drait to do every heavy duy lob in home chips or talus ry Built to also years of rough tough use heavy more rugged motor gives by chipse the hard wind and by capacity in a see high full load sport of 12.86 he had be to grant fin abed both motify allowed of 12.86 he had be to seeing any unity or loads talum shown nowaring features bet bearing any unity or loads trade on trade of the hard had be heart bet bearing any unity or loads trade of the long had been said and 12 to 18 for the proportion of the long had been said to 2 conduct of 11 approved rurd and plus bearing and the first proportion of the long had been said to be the first or did that your covered by the had for the long had you expect of the lock the life had plust on the life had your expect of the long had been been been by the had plust or not do be the new your expect of the long had long the later by the had plust or it is the life the life bearing and long the long you expect of the long had long the later by the had plust or it is the life the life bearing the long the lo th ngs you espect of it it

75c em, for Finest imported PRECISION PLIERSI

Plot frace & Commingston & Disturber Critics & East Cutbing Respect & Read Work & One Side Plate

One Side Wound & Sin De

FOR SPWILLES SPTI A. W. KIRS HORRALISTS
(MAPTSMYN OF ALS RIN in These superit for each

p tool stee fat a sed a m steen of

fisher A case ground and to shed on mounts had
austaces Amonth hu has been a mount had

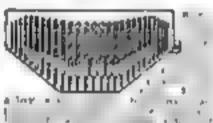
fishe an Jama meet perfectly to eafery and as you

had even the most die case hims a life has tre

evech comments and mounts had a rength

75c each . . . ALL 7 for \$5.00 ppd.

29 Pc. DRILL SET CHROME VANADIUM ORILLS



is also we seem and clean y had reamy and clean y his a through hardwards p. 2.

Also sum num from and the tanghest steem of the control of t

CHROME VANADIUM 60 Pt. Set Wire Gouge



36" FLEXIBLE SHAF For Propleton Working
-- Hard to Got of Plan

the 300 op. A half har a train the property of Bart o saw the company of the tree of the company o mark Ming is which of special stands on the great of an ine separate at a contract to the separate of an ine separate of an ine

THE TO BE COMPLETE POWER TOOL ACCESSORY SET 15 100 PIECES Be sagned for who to all I a Capaci-

A pump was product built accuments out that an half warm as any in a grant by saw my 125. If he heap of an accument half warm as any in a second out of the only \$4 96 per

Over \$15 value

Surpical Stock Hand Ground

\$200 CARVING KNIVES

The pharpent herbest granted, enterioral steel beating we have ever seen sharp in high for a to have seen sharp in high for a to have seen and pharte can do every job of two desire on the property of the same full manual and the property has been and a to my harde and hand a for many granter has been do hand a for many granter has been do hand a for many granter to a netter of manual points. The pharpost hetterst grand, energical size) क र का कर्नीको 'तु लक्ष्मानुक । वृहेन्य र 'ता क्षमानुक रुक्ता । इस्तानुक तुक्ता विकास स्थाप through rising it due from band ar mind a the through r and quick r noteh and mind the east r and quick r soleh and

AUTOMATIC -

SIPHON PUMP

ernational 51 3 low price say Bould

netheatically, safety with the to be The state of the s for a supply being a factor of a supply to the supply to t Friend School by discountry in a first 2 90 red



"Hoppy" SPLIT-IMAGE TRANSI The Most Revolutionary LEVEL & INCLINE MEASURE Ever Model The Mest Sewistenery LEVEL SINCLINE MEASURE for Model

Than along to you assue my a neck one instrument not east or one in the of the form of the part of the part of the other of the state of the other other of the other other

CAMPTING CARE Street Heavy Postic Lepther Like Larry III has campting the first Heavy Postic Lepther Like Larry III has District N

Fits Any 1/4" Electric Drift Hardened Steel ROTARY RASP

Rosps, Shopes, Planes, and Mixes

No home farm garage or shop can a great not to have this need us Rotary Rasp. Shap into the chuck of your 's' electric int and its ready for use. For 'e t for fast shaping of furn fure Hasting of wood peaks threets. Fan ag of floors boards and mixing of old peaks or other heavy liquids. 224 in dismeter 11 16 wide A terrific import from West Carronny. Shank, Gov't Surplus HIGH SPEED ROTARY FILES



Three bigh speed rutery h es will quick in a cil man a the man p had you can be at the state of t and the ten a go at a \$1.25 nuch file ниф

ALL 6 for \$6.50

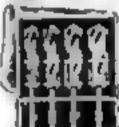
fity in pechati

SMAZING BLOCK & TACKLE

One Hand Operation

A . PORTABLE-malghe 13 mm.

Sigger Oralis at Lower Frien?



4 pt. High Chrome SPEED SET Rug \$42 MB NOW

An effect of a C Magnest a for several new as a long to the proof of t the two and were they for advanced to the two areas are constituted to a train and furthers. Heavy the providence of the property of the two thems who are not to the providence of the property of the two thems who are not to the providence of the 11 pp. helig Sarre for serve as the serve as



In response to possible Burns. hardware a serie prod.

The and principal prof hard nord a J.

Prof. and proposed in prof. and a J.

Prof. and proposed in prof. and the Company of the South of the prof. and the South of the South o

day 4 war be directed to

Sows Moral Into Any Shape MEWS SUPPREME METAL HOLESAW

New you can est sixtee.

Send Check or Money Order If COD fees extre. MONEY BACK GUARANTES

SCOTT MITCHELL HOUSE, INC. 415 So. Broadway, Yonkers, N.Y. (Dept. E-9

29

This HANDY Practical "How to Du It" book for Electric & Can Home Appilance Servicemen, Mechanics & Desiere covers Basic

Principles Servicing Operation & Reours of Home Appliances, Tells I, on to Locate Troubles, How to take Appliances Apart. How to Make Repairs How to Amembie and 1 concert to up to date testing methods wiring d agrams and complete data on each Phyllance

IT PAYS TO KNOW

Sometern Pressing from-- Waffir lighery Cherrence Heanters. Hec. ers of offee Mahers by see Hunters Water Henters Hanges House Mannes Ar, ange Festions Fundamental Electric benefit on the Processions H. P. Motors Food Misses hate & Blowers Ancion Chances

Ironora - Dishwashers - Carbage Disposers - Refrigeration - Win-45W Air Conditioners - (H) Burners - Drainage Pumpe Con Ranges Furnares & Water Heaters-Bullled Cas Appliances A SHOP COMPANION THAT A NEW FRE YOU KILL ESTIONS hasy to read and understand - over 800 pages

distrated with 500 photos and dia grams [00] Facts. A trady reference

P COMPLETE + PAY 52 A MO. TO GET THIS ASSISTANCE FOR YOURSELF SIMPLY FILL IM AND MAIL COUPON TODAY.



Step up your own shill with the facts and figures of your trade. Audels Mechanics Guides contain Fractical Invide Trade In semant on in a sandy form, Pully illustrated and Easy to Understand, Highly Entersed. Check the book you mant for DAYS FILE EXAMINATION Book No Moosy, Nothing to pay Postman.

MAIL ORDE

Piones send me for FREE EXAMINATION books marked (2) below, if I partid to heep them I agree to eat I by a Paye on each book or set priored and turber mail \$2 mentify on each book or set until I have seed green plus shipping charges. Otherwise I will extern them.

NOW

You Can Look Over Any Guide In Your Own Home

☐ SAVE 3H1771NB CHARGES! **Eaclose Full**

Coupen and We Pay Shipping Cydrigus

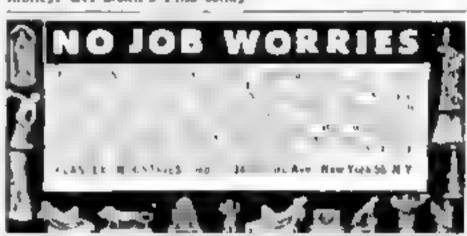
HOME APPLIANCE SERVICE GUIDE 864 Pages 86 AUTOMOBILE MECHANICS GUIDE 1696 Pages TRUCK & TRACTOR GUIDE, 1376 Pages DIESEL ENGINE MANUAL 660 Pages MACHIN STS HANDY BOOK, 1728 Pages WELDERS GUIDE, 608 Pages
BLUE PRINT READING, 648 Pages
MATHEMATICS & CALCULATIONS, 752 Pages
SHEET METAL PATTERN LAYOUTS 1152 Pg 7 Se SHEET METAL WORKERS HANDY BOOK 448 Pgs. 2 MECHANICAL CHAWING GUIDE, 192 Pages 2 MECHANICAL DRAWING & DESIGN, 480 Pages 3 TELEVIS ON SERVICE MANUAL, 480 Pages RADIOMANS GUIDE, 1088 Pages ELECTRONIC DEVICES, 304 Pages ELECTRIC MOTOR GUIDE, 1056 Pages W RING DIAGRAMS (Light & Power), 304 Pgs ELECTRICIANS EXAMINATIONS, 272 Pages ELECTRIC POWER CALCULATIONS, 480 Pages HANGY BOOK OF ELECTRICITY, 1520 Pages 3 ELECTRIC DICTIONARY, 2000 Terms 3 ELECTRIC LIBRARY 7000 Pages (10 Book Set) 38 REFRIGERATION & Air Conditioning, 1360 Pgs. 6 MILLWRIGHTS & MECHANICS GUIDE, 1248 Pgs. 5 POWER PLANT ENGINEERS GUIDE, 1568 Pages ENGINEERS & FIREMANS EXAMS, 544 Pages PUMPS, Hydraulic & Air Compressor, 1760 Pgs. OPERATING ENGINEERS LIBRARY (3 Books) 12 GARDENERS & GROWERS GUIDES (4 Book Set) B CARPENTERS & BUILDERS GUIDES (4 Book Set) & PLUMBERS & Steamfitters Guides (4 Buill Set) & MASONS AND BUILDERS GUIDES (4 Book Set) B PAINTERS & DECORATORS MANUAL, 464 Pgs. 2 HOUSE HEATING GUIDE, 1008 Pages 8 OIL BURNER GUIDE, 416 Pages

No Nagging Backache Means a **Good Night's Sleep** may come on with over-exertion, smotional upsets or day to day stress and strain. And fooks who eat and drink unwisely sometimes suffer mild bladder frritation , . . with

that restless, uncomfortable feeling

If you are miserable and worn out because of these discomforts, Doon's Pills often help by their pain relieving action, by their coothing effect to ease bladder fritation and by their mild diuretic action through the kidneys tend ing to increase the ouptput of the 15 miles of kidney tubes

So if pagging backsche makes you feel dragged-out, miserable, with restless, sleepless nights, don't wall, try Doan s Phis, get the same happy reitef millions have enjoyed for over 80 years. Ask for new, large economy size and save money. Get Donn's Phis today'





Earn \$6.750.00 your First Year Startpart time Complexed You whetha ned by a nearby dealer and at 5-day training action. As carput-opinistery circums expert you provide & services to moiting profits and customer satisfaction. No shop needed, Junt 2 average jobs a day note 2-.750 first year. We help build your laustices with 27 continuous services: counseling, not I advertising (McI avis, Farents, House Beautiful, others) new-paper advenues etc. Send for FRFF bookiets.

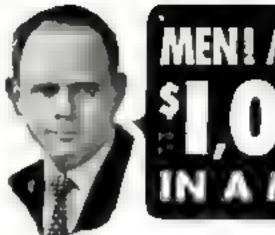






TRAINED MEN NEEDED! IN INDUSTRY - ARMED FORCES BIG PAY! - GOOD FUTURE! DIESEL ELECTRONICS AUTO AUTOMATION NEVER SEFORE has the opportunity been so good for the properly trained mechanic and technicism to step into BIG PAY POSITIONS with rapid advancement and future security virtually secured. YOUR SUCCESS depends on the quality of training you receive ., and the reputation of the school you attend YOUR GUARANTEE we are giving the best in mechanical and technical training is proved by the fact. High pay jobs in Industry, and ratings in the Armed Forces now waiting for our graduates. RESIDENT SHOP TRAINING is easier and costs less than you may think! We provide you with housing and part-time jobs while in school, plus free nation-wide placement service for graduates. Check subject where is which you are identified and shall for FEET JODITH BALLEY Technical Schools Volume Approved AUTOMATION 1650 S. Grand, St. Louis 4, Mo. Name Age State Street Journ John	
AUTO AUTO AUTOMATION MEYER REFORE has the opportunity been so good for the properly trained mechanic and technic can to step into BIG PAY POSITIONS with rapid advancement and future security virtually secured. YOUR SUCCESS depends on the quality of training you receive , and the reputation of the school you attend YOUR GUARANTEE we are giving the best in mechanical and technical training is proved by the fact. High pay jobs in Industry, and ratings in the Armed Forces now waiting for our graduates. RESIDENT SHOP TRAINING in easier and costs less than you may think! We provide you with housing and pert-time jobs while in school, plus free nation-wide placement service for graduates. Check sebject shave is which we are interested and mail for the provide shave is which we are interested and mail for the provide shave is which we are interested and mail for the provide shave in which we are interested and mail for the provide shave in which we are interested and mail for the provide shave in which we are interested and mail for the provide shave in which we are interested and mail for the provide shave in which we are interested and mail for the provide shave in which we are interested and mail for the provide shave in which we are interested and mail for the provide shave in which we are interested and mail for the provide shave in which we are interested and mail for the provide shave in which we are interested and mail for the provide share and costs less than your provide share and the provide	TRAINED MEN NEEDED!
MEYER SEFORE has the opportunity been so good for the properly trained mechanic and technician to step into BIG PAY POSITIONS with rapid advancement and future eccurity virtually assured. YOUR SUCCESS depends on the quality of training you receive , and the reputation of the school you attend YOUR GUARANTEE we are giving the best in mechanical and technical training is proved by the fact. High pay jobs in Industry, and ratings in the Armed Forces now waiting for our graduates. RESIDENT SHOP TRANNING in essier and costs less than you may think! We provide you with housing and part-time jobs while in school, plus free nation-wide placement service for graduates. Check select above is which you are identical and soil for the provide above is which you are identical and soil for the provide above is which you are identical and soil for the provide above is which you are identical and soil for the provide above is which you are identical and soil for the provide above is which you are identical and soil for the provide above in which you are identical and soil for the provide above in which you are identical and soil for the provide above in which you are identical and soil for the provide above in which you are identical and soil for the provide above in which you are identical and soil for the provide above in which you are identical and soil for the provide above in which you are identical and soil for the provide and soil for the provide above in which you are identical and soil for the provide and soil for the provid	DIESEL ELECTRONICS
YOUR SUCCESS depends on the quality of training you receive and the reputation of the school you attend YOUR GUARANTEE we are giving the best in mechanical and technical training in proved by the fact. High pay jobs in Industry, and ratings in the Armed Forces now waiting for our graduates. RESIDENT SHOP TRAINING in easier and costs less than you may think! We provide you with housing and part-time jobs while in school, plus free nation-wide placement service for graduates. Check subject above is which you are interested and mail for TRAINING STATES ADDITION TECHNICAL SCHOOLS AND TECHNICAL SCHOOLS Name Street Name Approved Age Street	MEVER BEFORE has the opportunity been so good for the properly trained mechanic and technician to step into BIG PAY POSITIONS with rapid advancement and future security virtually
the fact. High pay jobs in Industry, and ratings in the Armed Forces now waiting for our graduates. RESIDENT SHOP TRAINING in essier and costs less than you may think! We provide you with housing and part-time jobs while in school, plus free nation-wide placement service for graduates. Check subject shave is which you are identical and mall for Interest and Schools INTEREST AND REST. AND SCHOOLS Voteres Approved 1650 S. Grand, St. Louis 4, Mo. Name Street Name Age Street	YOUR SUCCESS depends on the quality of training you receive and the reputation of the school you attend YOUR GUARANTEE we are giving the best in
than you may think! We provide you with housing and part-time jobs while in school, plus free nation-wide placement service for graduates. Check subject above is which you are interested and multiple the subject above is which you are interested and multiple the subject above is which you are interested and multiple the subject above is which you are interested and multiple the subject above is which you are interested and multiple the subject above is which you are interested and multiple the subject above is which you are interested and multiple the subject above is which you are interested and multiple the subject above is which you are interested and multiple the subject above is which you are interested and multiple the subject above is which you are interested and multiple the subject above is which you are interested and multiple the subject above is which you are interested and multiple the subject above is which you are interested and multiple the subject above is which you are interested and multiple the subject above in which you are interested and multiple the subject above in which you are interested and multiple the subject above in which you are interested and multiple the subject above in which you are interested and multiple the subject and	mechanical and technical training is proved by the fact. High pay jobs in Industry, and rat- ings in the Armed Forces now waiting for our graduates.
BAILEY Technical Schools Automation 1650 S. Grand, St. Louis 4, Mo. NameApr	than you may think! We provide you with housing and pert-time jobs while in school, plus free nation-wide placement service for graduates.
Name Street	FREE BOOKIET
NameAge	AUTOMATION Yelman Approved
ToneZoneState	NaneAge
	ToneStole

ZONE_



MEN! Make up to \$1.000 IN A MONTH!

without "SELLING"

Sensational Demand for Low-Priced Fire Alarm PLUS Sure-Fire "No-Selling" Plan Offers Ambitious Men Huge Profit Opportunities

AMAZING NEW INVENTION



Even beginners who never sold anything in their lives are cleaning up unbelievable profits with the first practical effective, jost priced for Alarm ever invented tiented named at homes, factories, offices, stores up farins, for boats, everywhere. Professional salesmen are making bissent profess in years! Later to this ad 1% tell that about the plan that a producing orders for I to '2 Fire Augms per sale from 8 out of 10 prospects without selling. Here are the facts about the Fire A arm. It hangs on the wal, like a picture no wi ing, no instaliation. It's always on It smells a fire before danger All state of the point. When temperature then, Fire A and speed off automatically how, a load warming at can be heard 1/5 to le waken up sounded alesper give precious time to put out fire on I five department of escape And I sells for only \$4.95 with profit up to \$3.79 on each one.

Nearest Thing to AUTOMATION SELLING

With our field tested plan customers self themeryes. No coul canvassing. No hard selling to an even method can use
thoughte a sales plan even method can use
a secret facy recently the sales louis we give you (and
to but leave white you sleep! No most here in give
to a ne detail built if you want big money fact
the coupon now.

Make This Lighted-Match Demonstration

Sensitive! Lighted match triggers A arms in 3 seconds.

Free Sales Kit

Betth to money Independent of the eaching more counting facts, are per laureated Bales Kit over hand y a present to make morey your first are lieure in when are lieure in which are lieure in which are lieure in which are the are that are lieure in which are lieure in a lieure in which are lieure in a lieu



\$1.080 db profit in a month. No competition anywhere. Get in on the strains these now. Rusis this coupon.

MERLITE INDUSTRIES, Inc.

314 E. 32nd St., Dept. F-160

New York 16, N. Y.

ŗ	ALVIN WESLEY, Sales Manager Merite Industries, Inc. (Aiszm Division) 114 E. 32nd St., Dept. F-16D, New York JS, N. Y.
	Rush PREE SALES KIT and full details about your 'No Selling' plan which gives me opportunity to make up to \$1,000 to in a month without cold canvassing and hard selling—automatically fram not obligated
į	Nume
l	Address
Ĺ	In Canada: More Co., Ltd., 37! Dowd St., Mastrus J. P.O.

FREE CATALOG OF SCIENCE GIFTS

for Young People, ages 4-16

Hundreds of pre-tested, age-graded kits, instruments, books, games, etc. listed in illustrated catalog of



Science Materials Center, a division of The Library of Science. Here is a head-quarters for reliable, reasonably priced science gifts to entertain and inform young people. For FREE 35-page Catalog, write to

Dept. M-66, 59 Fourth Ave. New York 3, N. Y.

MANUFACTURE this BEAUTIFUL OUTDOOR FIREPLACE IN YOUR OWN BACKYARD

34.00 worth of sond and cement produces this altractive fireplace. Salts an
sight from \$60 to \$80. Easy to start
your own profitable has ness in your
backyard. He experience necessary,
his profits, Exclusive manufacturing
terriforius. Write immediately for full
details, General machines sold to U.S.
Gevernment, Dealer inquiries invited,
GENERAL ENGINES CO. INC. Therefore, N. A.

DEGREE IN

27 MONTHS

More Comfort Wearing FALSE TEETH

Here is a pleasant way to overcome loose plate discomfort, FASTEETH, an improved powder, sprinkled on upper and lower plates holds them firmer so that they feel more comfortable. No gummy goody pasty taste or feeling. It s alkaline (non-acid), Does not sour. Checks "plate odor" (denture breath). Get FASTEETH today at any drug counter.

Compas thems pain to be helds harmour faculty 2 and statents. New Bank he ence But thing Low union Earn board to 1 approved Encer South March June Statents from 48 states 40 foreign countries. Bend coupon for free catalog, four more son burn't poor?
699 E. Woshington Boulevard, fort Wayne 2, Indiana Please send me free information on 37 ms, B.S. DEGREES in: Aeropautics. Chemical Civil Electrical on M ms, B.E. DEGREES in Aeropautical Chemical Civil Mechanical Electrical (Power or Electronics) Metallargical on M ms, B.S. DEGREES in
Picase send me free information on 27 ms, B.S. DEGREES in: Aeropautica. Chemical Civil Electrical on 26 ms, B.E. DEGREES in Aeropautical Chemical Civil Mechanical Electrical (Power or Electronics) Metallargical on 25 ms, B.S. DEGREES in
on M ma, E.K. DEGREES in Aeronautical Chemical Civil Mechanical Electrical (Power or Electronics) Metallurgical on M ma, E.S. DEGREES in
on 14 me, E.S. DEGREES in
Mathematics Chemistry Physics

Make \$500 an Hour CASH PROFIT

THE DAY YOU START!



START YOUR OWN BUSINESS AT HOME...SHARPEN HOUSEHOLD, GARDEN AND SHOP TOOLS IN SPARE TIME

Now you can turn spare time into Big Cash Profits with new Belsaw Sharp-All. Sharpen knives, scissors, shears, snips, ice skates, mower blades, hedge trimmers, grass whips, axes, chisels, screw drivers, scrapers and saws... just about any household, garden and shop tool. Your own CASH business with no inventory. No calls to make. No experience needed.

Learn how easily you can start your own spare time business. Amazing low cost easy-payment plan. Send postcard for FREE BOOK.





Sensational Device Tests Eyes



MAKE BIG MONEY QUICK—FREE SAMPLE KIT! Show it to friends and others. Let them use it Free and watch their amatement over this Self Testing system. Here is a great new apportantly in a tremendous new field of untimited possibilities. Spars or full time. No experience needed, Write for Free sample kit.

G. G. Optical Co., Dept. AA-122, 28 E. Delaware PL, Chicago 11, III.

PURIFIES AIR

... with NO outside ducts l



BANISHES COOKING ODORS, removes smoke, grease—even pollen—by time-tested acient.fic miracle of recirculation through filters of Activated Charcoal—the substance that purifies air in atomic submirines.

Self-contained puttiless 2000 permits total freedom in kitchen design.

costly to install - me shelf space - weste of house heat and conditioned my

Write for Rierature: THE DUCTLESS HOOD CO., INC.
Dept. 23, 601 Plandome Rd., Manhasset, R. Y

RUBBER STAMP
BUSINESS
at home in spare time



Neme operators new MAKE \$9.20 AN HOUR in husiness once controlled by a few big companies

Amazing new rubber molding invention puts you in husbers for yourself. Now, for the first time, the profitable rubber stamp industry is open to individuals. Here is an opportunity to start small in spare time in your own home. Keep your job until you're making enough to be independent of time clocks and homes.

At one time only big companies could make rubber stamps because it required expensive machinery. People who wanted special stamps had to send cash in advance, wait days, or even weeks, and still run the chance of disappointment. This sensational invention changes all that.

Today, home operators like yourself can make rubber stamps. You take 27 costs of material, run it through this machine



and come up with a perfect stamp worth \$1.80. That's a \$1.58 profit on every stamp. Any one can do it—it's not hard at all. This machine runs on an ordinary electrical outlet and it will fit your kitchen table top. You can make special stamps like the ones for people's names and addresses, the ones offices use to mark packages, identify products—in fact, any kind of stamp at all.

Now, the big manufacturers still use oxpensive machines costing as much as \$3,000. They set the high prices for rubber stamps, ranging from \$1.80 up. You can make these stamps much cheaper with this inexpensive machine. So your profit is much greater—as much as \$9.20 every hour.

Act quickly to take advantage of this offer. Get a head start. Just fill out the coupon below. We'll mail you free information without obligation. We tell you all about this machine, how to get started in spare time, how to get orders coming in eight different ways—everything you need to know to succeed.

Here is your chance to get out in front and stay there in a fascinating new branch of an old, established highly profitable business. Mail for free facts today.

RUBBER STAMP DIV., 1512 Jarvis Ave. DEPT. R-3-K - - CHICAGO 28, ILLINOIS

MAIL COUPON	TOD.	AYI
-------------	------	-----

		-		
RUBBER	STAMP	DIV	Don't.	N-3-R
	-		Charle double	
3512 M/W			22	

Please 23th free inforts	ation. Tell me how	I can get into the prof-
trable subber stamp hi	asiness in space tin	te on very small invest-
ment Man all informs	tion, Free, No sale	aman is to call.

Nemr		
Address	~~~~~~	******************
C-17		State.

Inventors.

The following are the usual preliminary steps to take toward patent protection.

You are advised first, to make a disclosure of your invention. Date, sign and have this document witnessed by two or more persons who are capable of understanding your invention. The "Evidence of Invention" form mentioned below, we offer as a convenience in making your disclosure and in starting action leading toward patent protection.

Mail your disclosure to the registered patent attorney or agent whom you select to assist you, together with a letter authorizing him to conduct a preliminary search among previously granted U. S. patents for similar types of invention. He then prepares for you a report on the probable patentability of your invention and, if the report is favorable, recommends the further course you should take.

This firm is registered to precise before the U. S. Patent Office and is available to assist you in the proparation and presecution of patent applications. We shall be glad to send you without obligation, the "Evidence of Invention" disclosure form mentioned above and our instructive booklet, "Patent Protection for Inventors".

EVANS & Co. Marlin M. Evan

S40-K MERLIN BUILDING, WASHINGTON 6, R.C.

Today, choose the job you want—and prepare for it in time you might otherwise waste. Or if you are already in the work you like best, start training now for quicker promotion and increased pay. During the past 62 years Angrecian School has beliped ambitious people to reach higher goals Check subject that interests you and mail coupon for full information.

AMERICAN SCHOOL, Deal 6046, Deals of 58th, Chicoga 37, III
William Digazion, please send FREE and portpaid, full particulars whometer the subject checked below.

Afternative Technism Controlling Industrial School Coupon Machines Fredering Controlling Esterminate School Coupon School Coupon Machines Fredering Esterminate School Coupon School School School School School School School Coupon School School

INVENTORS!

Don't make a move without knowing these vital facts

DO YOU KNOW what patent loopholes are on your side how to make an im vocantre patent search. The most common causes of patent rejects us how to get fours as backing . . . the dat gers of "patent factories what kind of royally contract to watch out for?"

ALL THE FACTS YOU NEED

Brand new collion of INVENTIONS, PATENTS AND THEIR MANAGEMENT by L. K. Berle and L. Sprague deliamp covers overything a serious inventor must know how to get a few moof patent a new formula for deciding what needs inventing tricks of the trade dangers to avoid how to get the best possible deal when marketing your invention—and more more over 600 pages of facts, photographs, and diagrams

FREE EXAMINATION Just tear out this ad stat send it, with your name and address below to D. VAN HOPTRAND COMPANY, INC., Dept. 359, Princeton, M. J. Book at the wast for 7 days live rest or 11 not debetween stoply return at Otherwise send on v \$2.50 (in cass payments if you prefer as payment in find.

Natue		
Address		
City	Zotie State	- 1/41111

MAIL COUPON NOW



INVENTORS

Whether an invention is patentable can be substantially determined by a search of the U.S. Patent records. Without obligation, write for information explaining the steps you should take to secure a patent.

JOHN N. RANDOLPH

Registered Patent Attorney

805-Victor Building

Washington 1, D. C.

IPN VIEIN T. OPRES

PATENT INFORMATION

Week and

INVENTOR'S RECORD

without obligation

GUSTAVE MILLER

99-PS Warner Building WASHINGTON 4, D.C.

REGISTERED PATENT

ASSOCIATE EXAMINES U. S. PAT, OFF, 1922-1929

Patent Attorney & Advisor D. S. MAYT DEPT. 2836-2847

PATENT LAWYER



NVENTORS

U. 5. Patents protect your inventions. Our free book of "Instructions on Patent Procedure for Inventors," also "Certificate of Invention" form sent without obligation.

C. A. SNOW & CO.

REGISTERED PATENT ATTORNEYS

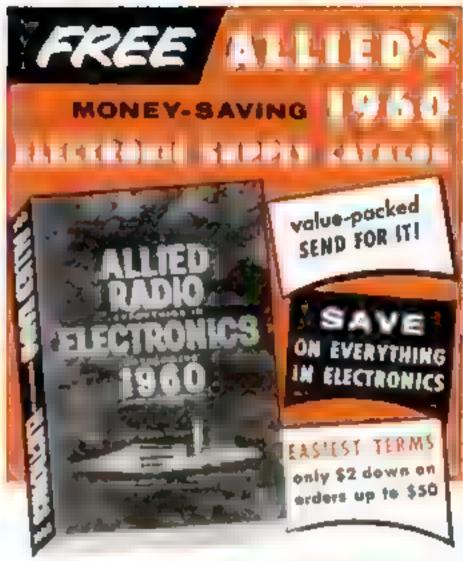
426 SNOW BUILDING WASHINGTON 1, D. C.

INVENTORS

PROTECT YOUR INVENTION BY A U. S. PATENT. SEND FOR FREE "INVENTION RECORD" FORM AND "PATENT INFORMATION EVERY INVENTOR SHOULD HAVE".

REGISTERED PATENT ATTORNEY

WOOLWORTH BLDG., 36th FLOOR, 94C NEW YORK CITY



WORLD'S LARGEST STOCKS

Send for the most widely used buying guide to everything in Electronics of for Experimenters, Builders, Amateurs, Servicemen, Engineers and Hi-Fi enthusiasts. Save on.

- KNIGHT-KITS—Bost in Build-Your-Own
- · Everything in STERED Hi-Fi
- Ni-Fi Music Systems and Components
- Topo Recorders & Phone Equipment
- Public Address & Paging Systems
- . IV Tubes, Automos, Accessories
- Amereur Station Equipment
- Letest Test & Leb lestrements
- Industrial Electronic Supplies
- · Parts, Tubes, Transistors, Tools & Books

save on everything in Electronics at ALLIED—get fastest service, expert personal help, guaranteed satisfaction. Send today for your FREE 1960 ALLIED Catalog.

Everything in Electronics from One Reliable Source

our 39th year



ALUED RADIO CORP., Dept. 7-19 100 M. Wastern Ave., Chicago 80, M.

Rush FREE 1960 ALLIED Catalog.

Name_____

.

Address

City____Zone__State___



A "MUST" FOR ENGINE SAFETY

...on cars with just panel warning lights!

If your car is equipped with just battery and oil warning lights, you need an ammeter and oil pressure gauge for complete operating safety. For finest gauge performance and dependability, install the new Stewart-Warner Deluxe Panel and Gauges!

Stewart-Worner Ammeter—tells actual rate of current flow, helps prevent burning out a generator . . . overcharging or discharging of battery.

Stewart-Warner Oil Pressure Gauge tells exact oil pressure, at any engine speed.

Stewart-Warner Deluxe Panel - Luxurious off-white grain color harmonizes with any interior. Bracket, light wire and socket included. Will accommodate two Stewart-Warner Gauges of your choice in economy, heavy-duty mechanical or electric types.

STEWART-WARNER MOTOR MINDER



Pays for Itself in gasoline sovings. Helps avoid costly repairs by giving constant check on condition of spork plugs, corburator, rings, valves, timing, etc.

STEWART-WARNER ELECTRIC FUEL PUMP

Maximum delivery, Quick starts. Prevents voper lock. Adjustable pressure feature. Na starving or "flatten out. Eliminates ato ling due to fuel surge. Recommended for today's high-compress on motors, 6-volt and 12-voil models.



Ask for them at your car dealer, service station, garage or automative parts store.



Dept. AN-99, 1840 Diversey Pkwy., Chicago 14, Ill.

PUN & PROPITABLE HOME BUSINESS

Flok Kraft is the craziest stuff. With this amazing new vetvet fiber apray you can turn lamps, radios, cabinets, figurates and 1000 other items into velvety objects of art. You can turn your spare time into real fun and but profits!

EARN UP TO \$300.00 PER WEEK SPARE TIME!

You can be emay like a for. In 15 minutes time, with 344 worth of Flok-Kraft, you can give an ordinary object a gorgeous 3 D firms and charge at least \$10.00!

REPRESENTATIVES IN YOUR AREA URGENTLY NEEDED

Own your own husaness. Work at home in your spare I mp. Help fill the huge growing demand for that unusual velvetfiber finish. Orders come from stores, offices, homes, decorators, auto dealers everywhere Possible mulion dollar boom. Get your share. Investigate today - he first in your area" Actual samples in 24 radiant colors. Confident all booklet: "10t Money Making Ideas" sent free! Send pobooklet: '10t Money Making Ideas' sent free! Send 50 money. Court industries, Lee Angeles 61, Colli., Sept. A-8



ow Made Easy! date course tenting just both of cule. Inside make there is the pick tooks of cule. Inside the course the pick tooks of cule. Inside the course the course to be sent to be s

reset hundyrsan borneis ne, en teorier investorie nervies stat ap operator fin it slop, buttiente dester aparentis. So suny lingarated inscend. Pull price only 25 pc pentional, at C O D puts pushage. In the contract of the territory arrestories appropriate of the territories arrestories appropriate of the territories arrestories arrestor

Multon-Hall Co., Dept 48-L 210 S. Clinton St., Chicago S. Iti.

HYDRAULIC JACK

Earn While You Learn at Home

Millions of Jacks in one & nate-service stations, truckers, may shoot, regard, factories, farms need servicing. We show you HOW easy stop by step directions, what techniques shem you HOW easy step by step directions, what teels to use EARN UP TO \$5 an hour, in space time, in your own basement or garage. Start your own business NOW, Write for folder No. PR 9 & free bonus affer

Institute of Mydraulic Jack Repair P.O. Sox 50, Steemfald, N. J.



The Gen Maker rames cataplete with all

necessary equipment in luding a super charged dismond blade for earling and all the wheels for granding shaping and pot et ag also come etc (netro close. The complete equipment as shown, tess me or and best for only \$16.50. for the first only \$16.50. day for Information and Higgs-

DEI MANUFACTURING CO. Dept. 8, Burlington, Wis.



New Plate Made From Your Old-Returned AIR MAIL Same Day . . . SEND FOR FREE INFORMATION on

new profess one impeloed that gives you light comfortable, natural tooking perfect. Siling plate—toped at hower from your old wire, housen, hope plate without on impression. Work pustantised SEND NO MONEY just sale main, address we ill much details at thout obligation. State I plates are limited.

THU-CRIP DENTAL LAS., 137 %, Deschoon, Dept. 2A, Chicago 2.

AND TOUGH TEXTILES LIKE A MACHINE

With SPEEDT STITIBER Automatic Sewing Awi, an one on mark and hill of a sew of reality and the sew of the sew o

thread and I different types of diamondpoliticed needles. Easy-to-fo low o rections wil make 3 by an expert in moutes. Extra needles and wated-thread always avail. part de very If COD \$1.98 for post-part de very If COD \$1.98 plan postage. MONEY BACK GUARANTES.

SPORTSMAN'S POST 366 Madison Ave., Dept. A-59, New York (2



EARN\$100 A WEEK AND UP

BE AN AUTO-DIESEL **MECHANIC...EARN** WHILE YOU LEARN

Many of our graduates sern \$100 s week and up. You learn fast in our school and shaps because you learn with tools on real equipment, Experienced Instructors explain WHY and show you HOW, then you DO IT YOURSELF One of the best equipped tech-nical schools in the United States. Thirtynine years' experience training men. Successful graduates in 48 states and many foreign countries. Approved for veterans. Day and evening classes. Free buildin-write today

NASHVILLE AUTO-DIESEL COLLEGE 226 7th Ave. N., Dept. 42 Nashville, Tenn.

BE FREE FROM TRUSS SLAVERY

Surely you want to THROW AWAY TRUSSES FOR-EVER, be rid of Rupture Worries. Then Why Do you put up with wearing a griping, chaffing and unesoltary trues the balance of your life? If you do, it will NOT be through necessity but through choice on your part.

Now there is a new modern Non-Surgical treatment that is designed to permanently correct rupture, These Non-Surgical treatments are so certain, that a Lifetime Certificate of Assurance is given. Write today for our New FREE Book that gives facts that may save you painful, expensive surgery. Telu how non-surgically you may again work, live play, love and enjoy life in the manner you desire. There is no obligation.
Excelsior Medical Clinic, Bept. H6224, Excelsior Springs, Me.



\$20 Sody Moid course included FREE with Oan Larie Sarbeits. Daily (and La e Sarbeits a paid People State Courses a day can make you a thinger state. It is report a day can make you a thinger state. He are to proper out a Corper state. So the period proper state. The period part to the period to approx 16% by the period Section with the period Section and the period Section Section 10 to the period Section Secti

52 99 Mriacol St. Dept. 970-2 Brooklyn 12 W.Y



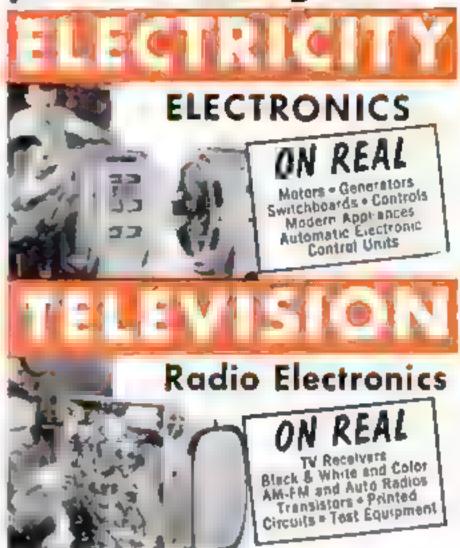


MANY FINISH IN 2 YEARS

No classes. No time wasted going to and from school. Progress as fast as your time and abilities permit. Standard H. S. texts supplied. Thousands enroll each year in this 62-year-old school. Send for FREE descriptive booklet.

	CAN SC 50th St obligation	Chica	pe 37,	AL.		ive bo	ok)et.
Name							
Address .	ceredited			Home	Study	Comocil	

These men are getting practical training in ...



Train in NEW Shop-Labs of

in Chicago—Bostrical and Bostronic Contur of the World. Prepare for a better job and a successful future in a Tur-COYNE where thousands of successful mon have trained for 60 years—largest, olders, best equipped school of its kind, Professional and experienced instructors show you bow, then do practical jobs yourself on more than a quarter of a million dollars worth of equipment. No previous experience or advanced education needed. Employment Service to Graduates.

Stort New - Pay Leter - Liberal Finance and Payment Plans. Pay most of toution after graduation. Part-time emproyment help for students. Choose from nine yearly Starting Dates.

Med Coupen or Write to Address Selow for free Book - Caude to Careers." Whether you prefer ELECTRICITY, TRIEVISION RADIO OF COMMINED ELECTRONICS TRAINING. which includes both fields, this book describes all training offered.

Information comes by mail. No obligation and NO SALESMAN WILL CALL.

Founded 1899 B W Cooke, Jr., Pres.

Chartered as an Educational Institution Not for Profit 1501 W. Congress Plewy., Chicago 7, Ill., Dapt 69-4C

MAIL COUPON
COYNE ELECTRICAL SCHOOL New Coyne Building, Dept. 69-4C 1501 W. Congress Phwy., Chicago 7, Ill.
Send BIG FREE book and details of all the training you after. However, I am especially interested in
☐ Electricity ☐ Television ☐ Both Fields
Name
Address

(funderstand no Salesmon will coll)

Stole.



LEARN AT HOME IN SPARE TIME (or at college in Chicago)

Check the want also a day as wapaper. SFE the bagpay opportunit so penties as a laftsman. What a more, year an har a third we I pay I prest go profession at home-southely case y. No species to not needed? Get comparts at play at personal Test case as in the mail, spend a few pleasant hours stadying each week. In a short time your door a well trained disfisman ready to take your pick of many good jobs. Yet new?



FREE INFORMATION—MAIL COUPON TODATE BUT FREE THE ALL LESSON I IS COMPUTED IN A LOCAL TOTAL TOTAL TOTAL THE PROPERTY OF THE PRO

CHICAGO TECHNICAL COLLEGE

C	HIGAG	O TEC	HNIGA	IL CO	LLEGI	Ŀ
	227 Tuch B cage 14. III		to, Michig	gan Ave.		
Ma	ities in DR	Louison will	th Informat	tion abou	t big oppor	r-
Na					Age	
				*	ALT	
l Add	iress					
Cit	у ,	1 + +	Zone	State		



great glue for every job you do

For Free Gluing Booktet send stamped, self-addressed envelope to Elmer, The Borden Company, Dept. 9-H 350 Madison Avenue, New York 17, N.Y.

BORDEN'S PRODUCTS FOR THE NOME HANDYWAR



WEAPONS, INC. 11029 Washington Blvd. Culver City 122, Calif.





Lyndhurst 5, New Jersey

per a side of the land about the second forecasting.

10 many to stand about at second write supering I tomore match present which substants are as to the second of the s

STUDY TO BE A DOCTOR of Psychology or Metaphysics

Obtain a Ps D Ms D or Ph D Be a Teacher, Lecturer or Accred till Practiti er Teach stoers how to arbieve Health, Hap-no est and Contentment Chartered by State Correspondence courses only Write for FREE book telling bow

THE NEOTARIAN FELLOWSHIP

Deck & Picknick Building

12¢ Pound

Kansar City 6, M mourt

YOU ARE UNDER ARREST!" Mele Bring Crooks to Justice Through Scientific CRIME DETECTION! We have truggly the grants the grants from presidents a standard to the presidents of the presidents

We have taught thousands this excit on profitable element indescribe. Let us teach you th your own home. Leach it need from the form of freezens I tentification. I once I hotography, secret Service Methods there are a quickly at small cost, has one of all American leaches. I begin it is no employ "A B. standards of graduates. We to a rithin the live lands of Crime."

INSTITUTE OF APPLIED SCIENCE, 1920 Sanapsulo Ave., Dept. 1366, Chicago 40, III,

1'Il Send You This Handsome SAMPLE CASE-FREE



and Show You How to Make Up to \$30.00 in a Day

WR. E for this Flits & Indexing Samplet ascensively with the translate big big value sult and expending for one workers others, for the grant grant of the made to measure clother Porket his cash profits in all anes. Because wearing our salts and over could bring made orders, we make it says could bring made orders, we make it says

for you to get your wn clutter without c your No schoolenge is needed. SAT'SFACTION SUARANTERN, SEND NO MONEY Rush your table address and age today!

J. C. FIELD & SON, INC., Harrison & Throop Sts.

DEFT. U-1720 - CHICABO ?, PLEINGIS

-NEVER AT THIS LOW PRICE!-GENUINE 120-POWER

ACHROMATIC TELESCOPE

with Achromatic Coated Lens



EXTRA BONUS GIFTS.

- # 273 page beek 'Handback of the Neovens"
- * Magic Star Finder Dani

4 Magnifications 20X, 40X, 75X, 120X Brings the Moon, Planets, Story, Setallitus, People 120 Times Closer, Clearer, Sharper

Nover bet ce has a general Acad DMATH 129X telescope with t short our for physician a new transmit again, for price for ex-120 th less closes absence as a stant from a people in our to possessor as give area are except and so except our plant you tiel that rear that is after touchless the or The attentof town let sharp contain Free at Wass that to the possible with the general high size to aghining the state may be be as a minimum of a functional actions that the showing at 20 X 30 X 7 X (20 X Tubes of at entering that say showing at 2000, 4000, the capital belower black to 100 times of backers of below. For one of others to excluse the best transfer to the b If on the set to tag I peed a contemporal set is beat east treds heart fitted at the degree of Land in a mount of lever degree of appears to the peed of the peed ANNUAL of the year Annual be completely as a shed with this end-standing explosive of the strong majors fried in (a) B Bland Cot piete, hoteling else to lony at the annualing horbe en of \$ 400

Send Cash. Check or Manny Order Today Dapt. PSO-1, OPTIK INSTRUMENT CO., 569 Felik Ave., N.Y. 17, M.Y.

PAYS DIG! SEND FOR PREE, SIG, ILLUS-

TRATED CATALOG NOW, Graduaces report hisk not supersonal last interests. Start and run tent own business quickly been, without of all ages, faith enalty I have revers faits Property Maintenances Appearing, Langua, Montrares, and Tellar Minimpolitation of the Langua, Montrares, and related to their start of the start



WEAVER SCHOOL OF REAL ESTATE: Ext. 5936) Hantes City, Me.

Catalog • 2900 Novelt

need 10c for amazing catalog of advolites, the gainests, stop gainests, scient inc supplies hubbles, immakers planes a boals looms, maste tricks, jobe prictes anasted seeds gadest timesavers, canteres optical goods projectors, moved tacky journey religious nove lies, disguises, moved tastroments stamps coins puzzles fortune te lars, radios, suto & b. hr accostores twist-copes, magn liers compation, banks, smokers gadgets, artists supplies, or ning sets engines motors, shockers in ves, bit folds firewards gade rifles. sports, books games, blants, etc. \$400. But address & 10c to: JOHNSON SMITH & GG , Dags. 464 Detruit 7 Wichigan

WANT A BETTER JOB? BECOME AN RONIC ENGI

ONLY 32 MONTHS TO EARN A BACHELOR OF SCIENCE DEGREE IN ELECTRONIC ENGINEERING

Class solvailment limited to show for individual instruction. Chartered by Sims of Californ's Non-scott non-sectarian coed-scattonal-established 31 years Either day or even of classes.

APPROVED FOR VETS-ENROLL NOW!

FACIFIC STATES UNIVERSITY, Dept. 99 1516 S. Western Ave., Los Angeles 6, Calif.

Please send your FREE CATALOG.

Address



EARN BIG MONEY... LEARN AT HOME IN SPARE TIME!

No previous training or art ability necessary with the Famous System of Manual Training!" *U S Pat applied for

Cartoonists are in greater demand than ever before by Blagas has newspapers in eview te eval or ad agencies set stud is As a si ccesiful Con-Liberita, trained Californist your early against not in fed. A highprofessional income and greater personal glowth can be yours. The "Famous System of Man-ual Teaming" has another the a-sands of men and a meen new problably e-gaged a cartooning A wonder! I part me or hobby ton Amuse yourse ! ynter friends

LEARN FAST-THE MODERN WAY

The Famous System of Manual Training is a designe new dif-Lesen, concelled any new pictors developed by long experienced.

highly sky led professional carteen strand in rice on You learn quick y and in rough y by starting to carbon moned. ate y w thou, temous mudy or caere ara

EARN WHILE YOU LEARN

Many Continental studence start ear night post space of to 11 min premote after first few remona-You gan work right in your own h me hold your present job. The Famous System of Man-

ual Training makes other methofficiand courses observed Learn rangily and easily with our modern, strengs ned personalized Method. Approved by educators and cartooniats everywhere.



GET ALL THE FACTS ... BIG. COLORFUL BOOK TOURS FREE

Full details of our patented Systen it as pages of useful fase hal ig information are contained in our Free Caralog yours for the asking Use the coupon now

Investigate and learn what Continental Schools and a Cartooning career can do for you Full details are free No obligation whatsnever and we do no send salesmen. All details conse to you by mail for you to read and decide Write today?



Says P R Tilton only thankful for pour fine troining as it has aiready enabled me to cre-

ate cartoons and drawings for a procesy chain for their weer by the , ping neurs? G. A. red. Indianapo a saya. I dodn't believe it was possible to learn so fast I have sold eight cartoons already earn no enough to pay for the complete course."



-			34	-			
Car	a tir		tel	Se	h o	ols	, Inc
							,
1201	4 BO	COLD STREET	AW E	OH AR	UCE+	CO 31	7 044 18

CONTINENTAL SCHOOLS, INC. Dept B-IL 4201 S. Broadway, Los Angeles 37 Calif First Free Catalog and other information by return " M. No charge or obligation, he extension will call.

> NAME No. HEAD

Not everyone does as well, but T. Y. COD). a ho started a business of his own, reports ...

For 12 months I've averaged

month income

— mast of it clear profit for me !

Many man have discovered how to be independent, to be free of layoffs and bosses, C. G. Naples grossed more than \$200 his first week. A father son combination grossed \$44 000 their second year H. Lemon says, "I natted \$133 in one 8-hour day."

How much you make depends largely on you. You need no special skill, no large investment. Start part time if you wish.

NO SHOP MICESSARY . Our Electric Deterger shampoor rugs, carpete right on floor-removes dirt and grame and helps to show their natural color and beauty. So efficient and safe it is used by largest railroads and hotels.

> This is not a lease proposition. You nwn the machine you work when and where you please and all the money you take in a your own. No risk Machines fully guaranteed

Taday YON SCHRADER MFG. CO., 911 "A" Pl., Racino, Wis.

> Without obligation send me FREE booklet about your RUG DETERMEN and tell me bow I can start my own permanent. probtable business.

Nome		
Address.		



Med

Sook

Cauboll

A dependable WOLL CAMPASS will haan poo fan enurse inbectreet pin pleange of lest, new neighborhouds a) precioes sed defeors. A culor to mutch your car or boot. \$5 \$6 to \$7.50 At year dealer. Wette for liferature.



HULL MFG. CO., F.O. Box 246-5-7, Worten, O.

FOCUS YOUR SMOOTH BORE DO DR RIFLED 27 .. AIR OR GAS GUMS WOLLS: D LEAD AMMO EFFEC TIME UP TO 100 FT



LOADING ACTION AND FY-BACK SHOT MAGAZINE

A Shot is placed in Firing Position each lime Ball is Picied Back and Closed Flash Amino Count on Full View Magazine



he ofth his and Supper 10th Sheet ## 646 Birly Bentons, Safe Consensor Uniform No Velocity Power -No 35 0 BEN AM P Super PS Sher Car "7 \$20.95 Cas Biffe No 3 Do Suger 100 125 45

Catalog All Models Bonjamin Single Shot & Repeaters—Cat 8th or 177 or 22. Also, Special Hunting & Festing Auris 8this.

BENJAMIN AIR RIFLE CO., 852 MARION ST., ST. LOUIS 4, MO.

MAKE EXTRA CASH

SHARPENING LAWN MOWERS THE MODERN WAY



Stort your own thou! Full or spare time. Earn many dollars in a short time. average \$5 00 per hour Many mowers need sharpen ng. With MODERN'S Extra Heavy Duty LAWN MOWER SHARPENER AND BED KNIFE GRINDER YOU have 5 mach nea in one. All operations are done quickly and eas, y You make money from the start. Write for free details.

MODERN MPG CO.

180 M Faer Daks Ave. Dept. Paundeau, California 11.4



MINIATURE SHIP MODELS

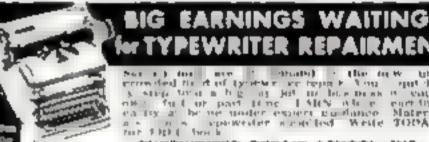


UNUSUAL -PRECISION DETAILED CATALOG HA

HEAVY CRUSSER \$2 00

Supplied

COMPY METAL PRODUCTS CO. 100. RICHMOND HILL III. NEW YORK, N Y



See a bottom many in the top in the top we get to a strong that the first problem we begind to the strong spot to a strong that the point is the first of the point of the strong can favor as the mean modern expects a mediance of the problem. In the strong that the stron

TYPEWRITER REPAIR SCHOOL, INC. Best, 3-29, 150 Park Ave. E. Rutherland, W. J. Lie to New Jersey Gept of Educ voow rider

DOUBLE BEARING EXCLUSIVE DUTY PUMPS IRRIGATE & DRAIN & CIRCULATE & SPRAY

se the content of agent 1 112 of the content and totally ent 2 114 the total of the first from 25 to 2 1 to 3 10.95 and 11 total and 1 tot

Rest for re strings

Prospect of each with nodes

Dan I delay-send for pure fodes

Money back Guarantee

Contributed and Gear Pumps in All Sizes LABAWCO PUMPS Belle Mead 4. N. J.

EE BOOKLETS! TELL HOW TO PREPARE FOR

Electronics

Train in BaYry Tech's Chicago or Taronto Isheratories for good jobs or your own business in Radio-TV-Exectronics. Or, in spare time at home, get visual and films, texts and elec-tronic parts. EMPLOYMENT SERVICE. Usually more jobs than graduates. Write Begt. P8-3-P

4141 Belmont Avenue Chicago 41, Illinois

IN CAMADA: 426 Reselven Ave., Taronta 12, Ont.

Shrinks Hemorrhoids New Way Without Surgery Stops Itch — Relieves Pain

For the first time science has found a new healing substance with the astonishing ability to shrink hemorrhoids and to relieve pain-without surgery.

In case after case, while gently relieving pain, actual reduction (shrinkage) took place.

Most amazing of all-results were so thorough that sufferers made astonishing statements like "Piles have ceased to be a problem!"

The secret is a new healing substance (Blo-Dyne*)—discovery of a world-famous research Institute.

This substance is now available in exppository or cintment form under the name Preparation H. Ask for it at all drug counters money back guarantes. *Res. U.S. Pat. Off

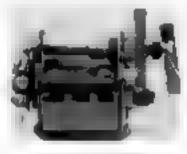
GOVERNMENT 40 ACRE ALASKAN OIL LEASE \$100

Act of Congress gives citizens equal rights with Oil Co.'s to obtain governit, lesses Alaska the latest of frontier in America is booming; major Co's show interest. You do no drilling yet may share in fortunes made from oil on public lands. Payments if desired, Free information & maps of development areas.

SHARON DIL SCOUTS 4722 N. Redde

Dopt. A

Chicago, III.



NEW Ainico Generator 54.951

with 40 ft. of wire and NEW telephone bell (Gov t Surplus) Crank forward to generate up to 60 voits will ring bell. Valued at more than \$15.00 Weighs 4. Ibe Excellent experimental maturial Allah pments FOR Simpson

TELEPHONE ENGINEERING CO.

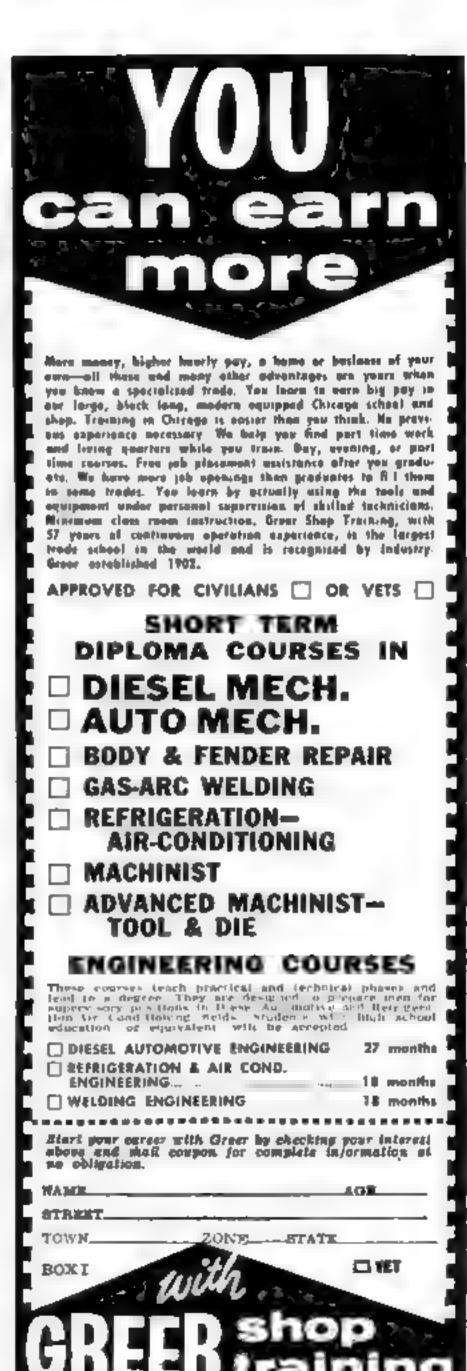
Dopt, 9A9 Simpson, Pa.

NEW, NATURAL LIGHTWEIGHT DENTAL PLAT

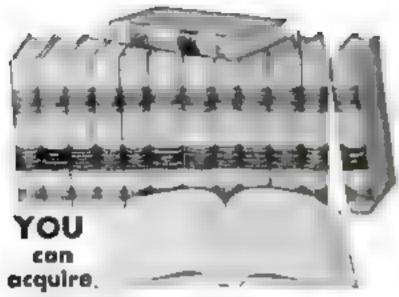
MADE FROM YOUR OLD DME. Now, Professions, Mathed gives you recommended in perfect littles that to place upper lewer or partial. I from your old crucked we locat plate without on empression. Ct INM At method groups fast expetts, hope sevings. Try new plate full to days at our risk. New plates sent you his blat as me dray.

SEND NO MOREY just your tarms and address for full particulation full particulation for full particulation f CLIMICAL DENTALLAB., 335 W. Madison 51., Dept. T-F150, Chicago U.M.





5. Michigan Ave., Chicago 14, 111.



RN LL. B. DEGREE

LaSalle's (amous Law Library—used as reference in many Law libraries and Law officeshas enabled thousands to master Law surprisingly fast, in spare hours at home, for business. and professional advancement.

These 14 remarkable volumes, compiled by leading professors and lawyers, cover the whole basic field of Law in condensed, orderly, sim-

philed manner

You advance rapidly with this great library, plus special lectures furnished. We guide you step-by-step with personagged Problem Method of instruction...you learn by doing-handling legal problems—not by memorizing rules.

bend for two FREE booklets, "Law Training for Leadership," and "Evidence," answering questions about Law and its value to you. Mail coupon below. No obligation.

Actrodited member, National Home Study Council

LA SALLE EXTENSION UNIVERSITY A Correspondence Institution

417 S. Deorborn St. Dept. 983L Chicago 5, III.

Send me your two FREE booklets described above. without obligation

Name.	 		. 4	ı	Ţ	4	,	+	•	ŀ	ė	•	Þ	ø	4	+		41	A	į	١,		Ţ	4 4	,	
Street																										



Guaranteed to Contain No Clay

High income can be serned operating a Brikerste plant, because Brikcrete - world's most modern mesonry - gives more value for less cost to building owners without secritice of profile. Huge savings local production makes possible low prices and high income potentials.



Choice Territories Open

Broad markets are waiting because Brikerete la popular for every type of residential, commercial and indus-

trial construction. Ultre modern in design, size, proportion, Cost less than lumber. Wide color range, Combines all the features that make for large consumer acceptance. More local plants are needed. Exclusive privileges in franchiseprotected territories. Mark-up averages 100% on basic cost. Machine available on long-term payments. Write for Brikgrein Book No. 2 and tentative recervation of territory.

Brikcrete Associates, Inc., 422 W. 25th, Holland, Mich.

U. S. MEDICAL CORPS STETHOSCOPE only 295 ppd.

Ever try to buy one of these? Hard to find, and usually expensive, this is a U.S. Medical Corps methoscope. Brand new surplus, it's ideal for doctors, engineers and mechanics (to check trouble spots in motors, esc.), educational for kids and adults. Lors of fun, too, Handy in the country. An excellent buy for \$2.95 ppd. (half regular price), Moneyback guarantee. BANNER BUPPLY HOUSE, 1308-PR Lincoln Bidg., N Y 17

SIGN PAINTING

Home-Study Course-Only \$5.95



Traches you commercial sign painting and sign out days as it is be no done tolers be found by shops at were necessary tompieve price as country to be found by shops at were necessary tompieve price as country tompieve price as country to be a supply shown as my methods of true a coloring protect in second anier loday Battafaction

MELSON-HALL (D., 218 S. Clinton St., Dept. 28-1, Chicago &, 116.



RECORDING CONTRACTS

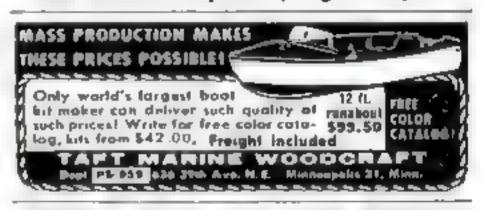
REVIEW FREE

Moil to STAR-CREST Recording Co. Dept. A-6, 1350 N. Highland, Hollywood 26, Calif.



Wear a Web-for comfortable, guaranteed relieff If not satisfied after trial, full purchase price refunded. Write inday for free book on ruphire care.

WEB TRUSS Co. Dept. PS-9, Hogerstown, Md.



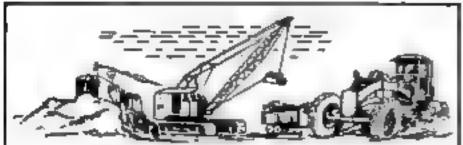
RUN A BIG-MONEY DINER

I'll show you how to start with little or se capital ...

I show you how to get started just as I did: where to locate.

7 ways to get capital, money making methods, even how to run a sandwich business right out of your own home with only a few dollars investment. Write for free details. Ken Kessler.

School of Restaurant Business 335 W. Madison Street, Popt. R-679, Chicago 6, Ill.



HIGH WAGES!

High Wages can be yours as an Operating Engineer of heavy construction equipment! Learn NOW to operate our diesel angined buildarers, draglines, crones, back hoos, surapers and motorgraders! Machines of major manufacturers are used in our training program. Contractors are on our advisory staff Cantractors need trained operators and pay high wages to our graduates.

We invite comports an and inspection of the notion's original tabulantian equipment operator's training schools

NEW! Announcing resident and nen-resident courses in Heavy Construction Management Write for details

Budget plan available. VETERANS: Ask about G.I. Benefits

Write TODAY for PREF School Catalog, no obligation, to either address

THE NATIONAL SCHOOLS of HEAVY EQUIPMENT OPERATION

Dept. A-23, P.O. Box 8415, Charlotte, N.C. Dept. A-23, P.O. Box 510, Weiser, Idaho





MONEY FOR YOU...

in hidden treasures

Lorate buried treasure count. gold and giver New transmitorized ing ruments for greater socialing dep hillers we ght operates on flash ight batter in Compilete line priced from \$79.50 PREZ literature authentic books of known treasures available WRITE today.

GOLDAK COMPANY

1 - 9 W Glenoaks Bird. Grendale Calif.

GET ELECTRONICS

V.T.I. training lands to success as technicisms, field envineers appoint late in communications in a guided missiles communees, rather, automation has a advanced courses in beary & lateratory Assoc degree in 19 mos file obtainable E. Plu access on O.I. approved Graduates with major companies Start Sept Feb. Dorms, campus H.S. graduals or equivalent Catalog.

VALPARAISO TECHNICAL INSTITUTE DEPT. S VALPARAISO, INDIANA

8FT. SPECIALS - 80¢



These CIANT & FROTERS can be yours. While they ast at a fraction of their value. New genuine neoprece gove, surplus Great for advertising you paint your message on om affate 4 fly Attracts crowds to sales displays openings slores as stat one. Fun at home for young 4 old and lust the thing for any party or school peren. Perfect for heach or picale. They re hig, they re FLN they're useful so order yours coday!

Postage pd. on ppd orders. Call res. add sales tax.

FRANK SALES, Dept. PS959, 3930 Summt Bled., Lot Angelos 29, Calif.



BUILD THIS SUPERB Schober ORGAN FROM SIMPLE KITS and save over 50%!

Give Your Family A Lifetime of Musical Joy With A Magnificent Schober Electronic Organi

THE GREAT

CONCERT

MODEL

meeth

specifications of

American

Gulid of

Organists

Now you can build the brilliant full-range Schober CONSOLETTE or the larger CONCERT MODEL with simple hand tools! No skills are needed; no woodworking nec-

essary Just assemble clearly marked electronic parts guided by stepby-step instructions. You build from kits, as fast or as slowly as you please.. at home, in your

spare time - with a small table serving as your enure work shop.

Pay As You Build!

Start building your organ at once, investing just \$18.94! The superb instrument you assemble is as fine and technically perfect, as a commercial organ ... yet you save over 50% on quality electronic parts, high-priced labor, usual store mark-up.

Free Booklet

Send for 16-page booklet in full color describing Schober organs you may build for home, church or achool, plus articles on how easy it is to build

your own organ and how pleasant it is to learn to play. Also available is 10° LP demonstration record (price \$2.00 - refundable on first order). Bend for literature. No obligation and no salesman will call.

Mail This Coupon for FREE Schober Literature

___ And Hi-Fi Demonstration Record TODAY!



The Scheber Organ Corp., Bopt. PS-1 2248 Breedway, New York 24, N. V.

Please send me FREE full-color booklet and other literature on the Schober organs.

Please send me the 10" hu-fi Schober demonstration record. I enclose \$2.00 (refundable on receipt of my first (u) order).

A66/80 --- -----



Everything in Electronica

Complete Catalog
Featuring The Best Values
Obtainable

Amphifiers, Cartridges and Music Systems is tare dictional to replic apparest systems of amateur (quirulus) to underture surplies is another to restructions. Secondaries of the same accordance of the same a

LEADERS IN HI-FI

OUR

39th

YEAR

The most complete electronic supply estatog crammed full of everything electronic at our customary down-to-earth money-mying prices.

The largest selection of hi-fi components and systems, greatest savings on Lafayette endorsed "best-buy" complete systems.

TASY PAY TERMS AVAILABLE --



My name is Charles Atlas.

I can't promise you'll

win the title of "World's

Most Perfectly Developed

Man" as I did. But I do

believe I can make a

powerful He-Man of you -
in a very short time. You

can prove it to yourself

-- at my risk. My big free

book tells how to do it.



FREE BOOK Mall coupon now for free 32 - page book Tells how I can give you "Stand-Out" muscles how Dynamic Tension can make you a new man confident popular successful Rush coupon to me personally CHARLES ATLAS, Dept. 13, 115 E. 23 St., N.Y. 10,

	LES AYL			- 10 I		
Dear SH	Charles mmer Y	Atha I (Check : Vulst, Ni	fere's as man ips	the Kin y as you Mar	d of Body like) a Powerf	
Send Ahowii 32 pa	og bow ces cros	pht, Sollutely Pl Dynamic nmed wi	id REE, a Tenato th phi	More Sette Can to copy of Can to cop	s, Grip Powerfier Energy t your faz nake me a sanswers	, Sleep nous book new man.
Name.	ons, and				Age rite Plainly	· · · ·
Addres	iä			+	*** *	
City				Zone .	State .	

MEN PAST 40

Afflicted With Bladder Trouble, Pains in Back, Hips, Legs, Nervousness, Tiredness.

If you have these troubles, particularly bladder trouble, then your condition may be traced to Glandular Inflammation . . . a constitutional disease. Neglect of this condition often leads to premature old age and sometimes incurable malignancy.

The Excelsion Medical Clinic has a New Free Book that tells how thousands of men have been successfully treated here at Excelsion Springs for Glandular Inflammation by NON-SURGICAL Methods. They found soothing relief and a new outlook in the future of life.

This Free Book may prove of utmost importance in your life. Write Today, There is no obligation

Excelsion Medical Clinic Dept. 85229 Excelsion Spgs., Me.



GOVERNMENT OIL LEASES LOW AS \$1 PER ACRE.

MT HUNITE ...

You do no drilling, pay no taxes, may realize a king-size profit without ever leaving home. Write for free map and literature.

AMERICAN OIL SCOUTS, Dept. P\$
8350 Sonta Manico Blvd Les Angeles 46, Calif

TESTS BLOOD PRESSURE



at home with guaranteed results. Check yourse's day you is the party of the party of the following put party of the following put

pers. Single automatic operation of the times at this of 27 of \$24.95. In aprent \$34.95.

Buchash P. 7 California

RESEARCH SPECIALTY CO.

2035 @ N. Western Ave. Chicago 47, Ulinois

WORLD'S LOWEST PRICED CALCULATOR! NEW! NEW! NEW! NEW!

TOM THUMB ADDING MACKINE

With beaut ful leatherstie correlag case.

MADE in AMERICA DY AMERICANS.

Beware of these imported imitations.

Adds Up to One 8-11 cm. 1 600 000 000

Adds Up to One 8-11 cm. 2 foot occupants

Minage lizes Must had So to See Mechanism

GUARANTEED FOR YOUR LIFETIME

[deat for Housewitten, Shoppets Studients, Englineers and Tax work Take 1 o the oper Market

sare 355 every week We pay postage I you send there a subject a street week We pay postage I you send there a subject a street we pay postage I you send there a subject a street we pay postage I you send there and the pattern of I yet in the payer of the I was postage. I we considered money retained to by return mall. Special G.f. Offer 2 Machines for unity \$3.45 Agents Wabred Wake easy mines selving a Top Quality I did not at our printed a site we price TOM THUMB ADDING MACHINE P.O. Box 5046, Dept \$-29 Philade phile 11 Ferma.



LEARN MEAT CUTTING AT NATIONAL Pay After Graduation



The steady dependable trade of Meat Cutting taught easily in 8 short weeks. YOU LEARN BY DOING under actual mest market conditions in big modern school at Toledo.

For beginners or men with experience. Get a profitable store of your own. Remember PEOPLE MUST EAT! Big pay jobs, Free employment help. Thousands of successful graduates.

Buying, Cutting, percentage, pricing, advertising, selfing, etc. A complete retail meat education. National School established 36 years. Get National training NOW. Pay your tustion in easy weekly payments

after you graduate. Send coupon for FREE school catalog-TODAY. G.L. approved.

Matronal Sci Dept 21 W	hool of W	4. Ohi	ling, lot.			
To ado (A ! Neara Nu o	Meat cut	HANGE THE	pay Merch	to it eliter		
5 2000		+	•		Al	tu .
Address.				+	h + h	h +
CILF		Approv	ed for Ver		ile ,	

50%

AND MORE

DURING THIS GREAT SALE



FIVE DAY FREE TRIAL-(asy Terms |

Buy direct from world's largest exclusive accombing dealer. Sace SPS or more, Finest imported Italian makes: ever 20 models 5 DAY FREE TRIAL, Lifetime guarantee Trade-ins accepted. Bonus Write today for clar tatany and Low Wholesels Prices-FHEE!

ACCORDION MANUFACTURERS & WHOLESALERS OUTLET 2003 West Chicago Avenue, Dept. P. 99 Chicago 32 Hillnois Please tush noter cutaing wholesels price list.

Will You Trade 1 Hour a Week

You can quickly step into a well-paid job or start a big-profit business of your own. Shortage of locksmiths means opportunities everywhere, spare-time or full-time

> EARN EXTRA MONEY FAUM THE STABIT All Special Tools, Supplies For alched Fron

Age, education, minor physical hapdicaps don t matter in this growing, Ready-income trade. You learn fast at home-gain practical experience through well illustrated lessons. You do ceal 10bs under the personal guidance of experts. Only school of its kind. Licensed State of N. J., Accredited National Home Study Council

For a future as your own boss, or in a big pay job, send for FREE illustrated book. Mail coupon at once. No salesman will call

Approved for Veterons

Locksmithing Institute Dept. 209-9, 180 Park Ave. E. Stutherford, M. J.

Please send FREE and without obligation illustrated book

Name

Address

SEND FOR

FREE BOOK

Professional, Tools

FREE with Course

Zone Tone

GINEERING

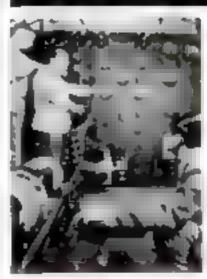


Photo of Reald Students in Piectrical Laboratory

Earell Now for New Term

Heald College Ranks FIRST West of the Musemppi in "Who's Who in America"

Send for FREE Information

Heald Enrineering College

Sat. 1965 Van Hess of Post, Dept. PS-959 Son Francisco, California Hould Trained Engineers ere Moving Ahead and Winning High Positions Throughout American Business and Industry.

BACKELOR OF SCIENCE DEGREE, 30 MONTHS

Degree Courses

	Electronic Engineering	
	Electrical Engineering	
	Highway Engineer no	
	Mechanical Engineering	1
	Structural Engineer no	
ο.	Civil Engineering	
	Architecture	

TELEVISION Caler TV Diplome Courses:

E ectronic Technicion Industrial Electronic Tech.

Tool & Die Design Architectural Drafting Mechan cal Drofting

Approved for Velerons

HAME	
STREET	
CITY	
STATE	

HOME PAINTING TIP NO. 49



For neat, professional-looking point jobs use "Scotch" Brand Masking Tape, Sticks tight, stretches to hug curves or irregular surfaces. Paint won't bleed through, When paint has "set" (but not fully dried), "Scotch" Masking Tape strips off quickly and easily, leaves a clean sharp edge. An invaluable aid for painting with brush, roller orsprayean, Ask for "Scotch" Brand Mask-

ing Tape in the handy cutter-edge carton-35¢, 69¢, 98¢, \$1.69 sizes wherever paint is sold!

"SCOTCH" and plaid design of registered trademarks of 3M Co., St. Paul 6, Minn. 🕲 JM Co. 1959.



Superior's New Model 70 UTILITY TESTER .

FOR REPAIRING MOTORS • AllTOMORILES • T

As an electrical trauble shooter the Model 70:



- Will rest Toustern, Irnes, Studiers, Stanting Pads, Clarks, Fors. Voccom Clemens, Enfrigoresper, Lamps, Plearesquery, Sartiches, Bhormosputs, atc.
- Will test off TV takes for agent Mannack, Japan. plement shorts, burned out takes, etc.
- Messerus A.C. and D.C. Voltages, A.C. and D.C.
- mere opront concemption while the
- Incorporates a sensitive diversion norm symmetry and in absorbed appli-Office, Statute, Str.
- a lankage detecting decide will indicate sentingly from may place to 5 magazine. (amés 000,000,25

an Automotive Tester the Model 70 will test: 6 Both & Yok and 12 Yeb Borage Sutterior # Generators & Statutes & Distributors 4 Ignition Colle 9 Engulators 6 Balays 9 Circuit Brankers # Cigarotte Lighters & Stop Lights # Condomers & Directional Signal Systems & All Lestons and Bullis & Fance & Harring Systems & Horse # Also will beauty poor grounds, breaks in wiring, poor connections, etc.

Model 70 comes complete including 64 page book, only SHIPPED ON APPROV NO MONEY WITH ORDER - NO C. O. D.

Try It has \$6 days nafery you buy. If surspectally methods Une send 69.86 and pag believed at 1820 of \$4.00 ber meth for A marchy .-- No Annay in not completely assisted, return to us, my planeites success.

MOSS SUSCISSIONIC INC	
Dopl. D-658 3849 Touth	Ave., New York 34, 91, Y.
Please ruch Wodel 76, 25	dillefactory I will pay on
forms specified. Otherwise	1 will return tenter.
Holes	

_
_
_

LEARN TO CAMER RATE or REBUIL

Complete Mechanics Course covering Diesel Complete Rectain in Course covering Direct the de transmiss into the doctor converters; fuel ingestion was mes; truck assembles inleads of we assembled steering systems rate control assembled to brave easiers rate control ing permaning to brave years much such as less there is rapers and a off agilway Course time—59 hours. It works to 13 to be seen a toron out to begin for data a liquid of very control and covering a permaning course. Course pe ment plan Write for

OPERATORS COURSE

(cann be operate buildoners example, under hompers, example tractors

dead has offer gloway dump trucks ride on 1 70th agree Greek Training

the of on reas W of Chrisger I on rouge of Courses he under pieces

then eath offer to present to make their one ride. Moreover,

there are trace in You care y actually operating of the volumental actual y operating of the volumental actual y operation of the bedievers monders,

we agree decrease in the operation of the bedievers monders,

we agreed dearly even Mother II he be trained purposed that even Mother II he be trained by pieces.

PPZ TECHNICAL INSTITUTE J. Hutch Box 278, Braidwood, Itt.

DOLLS! DOLLS! DOLLS!

LEARN world's most fascinating business. We teach you to repole, make sell all kinds of Dalls and accessories. Study at home Earn while you learn Start your own business part or full-time. We show you how, FREE beaklet without obligation.

THE DOLL HOSPITAL SCHOOL

Studio \$-99

11826 San Vicente Blvd , Los Angeles 49, California



Broken or Loose FALSE PLATE?



Fix it Yourself EASILY in a few Minutes Your plates may become broken or loose just when you need them most. With FIX IT KIT you can repair

your own broken plates. A so tightens louse fitting plates, can'ty Get permanent comfort with professional material Complete instructions. Satisfaction guaranteed or your money refunded Order New at a new low price only \$2.55 portpaid — or sent C.O.D. DENT-FIX BENTAL PRODUCTS, Dept. 181 Kansas City 41, Mo.

HAWAII STATEHOOD

To honor this most historic necesson a new MAWAII a ginal comment a corp has been less if we we I soud you a heartfully churg oil souveriff care upe atreatiff the starte made a literature of the first day of people is a dread to be easily be up of the President is a dread to be that on PLUS the to by stamp mer issued of his People the to by stamp mer issued of his People of the to by stamp mer issued of his People of the to be about a portrait AND a Grace for he wedther a start and for only the Or order all different first flag to been for just \$2 honey back it not completely anisaged—ash for less of other covers K. M. WALSH BOX 308-4

MAKE A FORTUNE Just Showing People New LIQUID



IN JUST to SECONDS

Dare people to pull apart shoe lace you repair with amazing NU-SEW before their very eyes Shows dramatically how NU SEW mends cloth og socks, canvas, etc. in seconds-without sewing' Hundreds of uses. Big profits full or spare time Seil direct or to stores or through sub-agents and fur d raising groups Comes in Counter Display Sample \$1 00 eredi ed to first order. Doz. \$6. 12 doz. \$56 Re atla 21 80 ca. Sales guaranteed. Pacts free, Send TODAY

UNIQUE PRODUCTS Dout, 1499, Chicago d, Hr.

Get PLASTIC LAMINATING AT HOME INTO OFFICE AND STATE THE AND HOME WORLD TO SE ON HOUSE OF A PARE THE AND HOME WAS A PROPERTY OF A PARE THE AND HOME.

Send coupon for Free facts about the newest and most fast nating of all home operated businesses. For the first time a simplified machine brings the fabulous profits of Plastic Searing and Plastic Laminations within the evach of the small operator. Anjoine can learn to operate the machine with a few minutes practice then with our magic mail Plan can get mail orders pouring in daily with each in every wavelope. No

theversing—so setting. We even supply the circulars you stall to bring buch cosh and orders. Iten't waste a minute. Bush your name, We'll send you FREE and postpaid prives, prices, de alls and all the facts you need to start. Mail coupon or send name on postcard. No charge.

WARNER ELECTRIC CO.

1512 Jureis Av., Bopt. L.J.-If, Chicago 26, 161.



WARREN ELECTRIC CO., 1512 Juris Av. Boyt. L.3-K, Chicago 26, 111.
At no cost to me, please ruth complete details postage propaid. I am under no obligation.
Name
Address
City

FREE BOOK

the machine a Plastic Bealing Job - enferred by mall-redy lie in material coat brings back \$2.58 in cash by mall. Caparity of machine \$23.00 profit per hour of tearation.

THIS ...

Write today for a FREE ropy of illustrated law book. "THE LAW-TRAINED MAN," which shows how to earn the professional Backston of Laws (LL B.) degree through home study of the famous Blackstone Law Course. All necessary books and lessons provided. Moderate cost, convenient monthly terms. Write for FREE law training book today.

Blackstone School of Law, 307 N. Michigan Ave.

Pounded 1890 Dept. 126, Chicago 1, Illinois

MAKE YOUR FORTUNE

Soil famous Spring Step Cushion Shoes for all the family—men women, children and babies! Earn big money daily plus Cash Bonus and Retirement Income with amazing 2 minute demonstration that sells on sight Big repeat business. Full or spare time America's Biggest Selection of Shoes for all the family free outfit given No investment over Write today.

ORTHO-VENT SHOE CO., Inc.
499 Brand Road, Salom, Virginia



MAKE THINGS VANISH! BE A MAGICIAN!

Entertain and attenute others! Make money tool 1000 New Tricks now available! Buth name address and only 25g for Grant Professional Catalog 160 Pages Thick Tricks! Jokes! Magic! Mirotles! I usuals! Murry! Only 25g.

SENSATIONAL PASE TRICK INCLUDED

House of 1000 Mysteries + 202 54 Pinewood + Trumbull Conn.



We give you handlest himiting and behing inite you we ever had:
has 4 likely kerst highly tem, eved size blade. VERY SEARP
himitive has be well balts but the season of you will our
he we wholessio bares by Picase seed 25c for hardling his
limit—but send 25c handling for each balts Order Tolky!
HUNTING KNIFE Dept, K-427, See U11, 54 Louis. Mo



Some make more, some less...

Some make more, some less...

We help you to start Your
Own Alf-Year Business

Make Sig Moneyf With
our easily operated,
highly efficient Wall

our easily operated, highly efficient Wall Washer, Charles Stelle took in \$217 in first ten days. E. L. Goes took in more than \$10,000 in one year. G. H. Jones wrote, "I

:

1

:

Œ

made a net profit of \$1200 on one job." And no wonder—this machine washes walls 6 times faster and better than by hand and with no mess—no drop cloths needed.

Your Money Making Opportunity • We want more men to go into this profitable business for themselves and enjoy independence—freedom from layoffs and bosses. Customers everywhere—homes, offices, schools, churches, hotels, etc. How much you earn depends largely on you. What you take in is mostly profit. No need to rent shop or office; operate from home. Can start spare time until your full time is justified.

Lose No Time-Send Coupon Today for All the Facts

FREE BOOK! MAIL COUPON TODAY!

YON SCHILLDER MING. CO.
911 "W"PL, Ruzine, Wisconsin
Send at once (no obligation) your FREE bookle
containing information about your WALL WASHING
MACHINE and how I can start my own permanent
profitable humanes,

Noise		
Address		
CDy	Zone 5*o*e	

.



IF YOU, TOO. ARE TIRED. **WORN OUT**

with FATIGUE-

Turn to the Amazina

EDANOL-

now giving new kope and help to thousandsi

Within hours you can often start to increase the number of

RED BLOOD CELLS-

restore their rich, red color and within days, release wenderful new energy through your whole, tired, ren-dawn systemia



Make This Test At Our Expense

4-DAY SUPPLY

We make this sensational FILES offer so that you may we what EDANOL may do for 1 to 12 as you use these easy to take exp.

siller will your meals, totalinet be rid of the constant wearsing M. akpess which now players you 100 can f on we for the part what a mights aid this pet of sopplement may be in recenting

sone it was lost strength and CHESTY

They to no obligation to buy nustrane no mentaly pareliase plan von may have Fifth OF UHARCE not that a sample but and DRESHITY PACKED 31 don supply of appearing EDANOL. with the nonce it is of teen laser 25 meas of red vilas in 1st2 and other stimulants the the legited mg of

Each EDANOL Capsule Contains:

Vit. Byg with Intrinsic Factor Y USP Unit Ferrous Fymerote 350 mg. (eveliable from 105 mg.)

"Fver-Siemach	
Conc 200	mg.
Vit. 84 10	四個。
VII. B2 5	mg.
D1925 m	cpt.
Folis Acid 1.67	eg.
Vit. 04	må.
Choline 25	m p.
N. Amide 50	mg.
VII. C 100	mg
Cal. Pante 10	mit.
Inosital 25	

RICH, RED BLOOD

We are happy to pay the expense of this sensational offer beganse My re sure that once you so expen red be terriffe HITY VOL. gives you a sig flaporer.

want to be will air these splended capsules. You'll order them, than then on at Alba with Quota a famous, money wring direct. to borne peters (a) in fine cupper now area Bhal this new was waich may give you new scrength and energy and a new los of bring.

*Dur in from-deflefenege anames

VITAMIN-QUOTA

One of the world's largest retailers of v. tamine

1923 Serving over 2 500 000 families coast-to-coast

Dept. T-688, 880 Broadway, New York 3, N Y

Dept. T-688, 1125 Crenshow Blvd , Los Angeles 19, Calif

Please send me absolutely FREE a full fresh Miday supply of EDANOL I enclose 25c to cover cost of packing and malling.

I hudershand that I am under no obtain too what we've and that no agenta with eat, on me

Name

Address

Gib

Zone

Only 1 FREE Supply to a family, please?

LUGER

9200 Access Road, Minneapolis 20, Minn.

FIBERGLASS

50 Modeh; 8' to 18' \$41 95 up, frt. pd. Easy Terms

FREE CATALOG



Stylish cruiters, runabouts, convertibles, fishing. Fre-assembled, and pre-formed units assure perfect assembly by anyonel Equal factory-built. Save you 1/2 to 1/4. FREE CATALOG has natural color photos, details, accessories, trailers, point fiberglass supplies. WRITE TODAY.

Earn \$100 Per Week and up AUTO DIESEL MECHANICS

Moster a trade with a future- feart Auto Diesel mechanics in our shops. You leave with tools an real equipment Both while

you learn. Many of our graduates earn \$100 per week and up Ne previous experience necessary. Our and algebra courses. Approved for veterane, Write for free buttetin.

NASHVILLE AUTO-DIESEL COLLEGE

Machville 3, Tenn



SSS TREASURE SSS

New translator metal detector finds lost or hidden treasure, coins, gold, hiver jewe'ry te de Profitable hob-by New underwater metal detector detects sunken ships, outboard mo-tors etc is up to 200 feet of sait or fresh water Operates from a boat. Boat lation counters. Many other Mingely plan care on

GARDINER ELECTRONICS CO. 2545 E. Indian School Phoenia, Arlauna

Uncover Hidden Secrets by ANALYZING HANDWRITING!

NOW you can "hee" peoplet innermost thoughts by studying to a facility the Just out men se notice text he world's for most suite by M. N. Bulket. Founder of Internations, Capan trains. Secrety Big bests of an art, of more Only \$5.95 postus is of t O D plus possure. Satisfaction guaranteed or introduction full refund. Send for ' Har there my trains today you'll be good you lid! NELSON-HALL CO., 210 \$. Cliaton \$1. Dept. JA-1. Chicago \$, 10. Sub-stantion.

LOWERT PRINCES .32 Gal. BEVOLVER AVAILABLE

hitar & Shor ,22 Short Baybin dation dist. F. \$15. Bill -- \$49.97 Yeloo

Only Godfrey Gure could find a garvine 22 Cat. Browler raday for \$15.96. Small Paper 27 Cal Blas Spender uph lat aligned was your packet or one. Can be used for h ing or transport Solid steel berryl gloss clowing to turner Queligrap handles A face leading double on Just pull the Integer to Fee

PARTY Borr of JSS Short Cartelifore with all godiest.

Order by Mail Today ... Send \$5.00 down, Bal. C.O.D GODFREY MAPORT CORP., Bopt. PS 3, 261 Sees



Aun your own probleble' shoe store business from home! Represent fast growing million dollar firm in spare or full time. We give you -- FREE -- complete Starting Outfit that makes you \$217 EXTRA each month for just 2 easy orders a day. Feature 195 fast-selling dress, sport, work shoe styles for men, women. Air-cushson short, many special features! Sizes 21/3-15-AAAA to EEEE. Sell to friends and folks where you work. Rush

MASON postcard for FREE Outfit! SMOE, Dept.F720, ChippewaFalls, Wisconsia



Classified Ads only \$1.10 per word insertion, payable in edvance. Minimum ad 10 words. To be included in Navamber issue, copy should be in our office by September 23. No concellations accepted after September 15, Address orders to O, K. Kelly, Classified Adv. Mgc.

At TOMORITES & MIDGET CARS

FULL color post card photos of antique and classic cars, 25 for \$1, specify series 1. 3. 3. or 4 inil different). From list, L I Auto Museum, Southampton, New York

CROSLEY of Poreign car parts catalogue. Parts discount club. Sox 7, E.mont, New York.

1859 CATALOG on Parts Kits for Golf Buggy of Jr Sports Car 25c, India Corporation, 1816 Madison, Indianapolis.

HUNDREDS of automobile catalogs—American antique, foreign dealer books glissy photographs shop manuals free motor magazines listed by not sprude bragan sation Write approvidatel got in free mainty list. Auto Manuaca, Stockbridge. Michigan

AUTO SUPPLIES & EQUIPMENT

SAVE money on Jeep and army truck parts. Large inventory Cutalogs for Jeep and G M C owners American Auto Parts Co 1810-PS Locust, Kansas City Missouri

Otant Auto Parts Catalog Thousands Special Accessories Stores Don t Handle Oadgets Custom Equipment Send 25c (Refundable) Newboard Automotica Industries, 5505-PS-9 Beverly, Los Anguin 22, California.

AUTO shop welding repair training in world's largest non-profit school Low tontion. Free bookiet Hobert Weiders, Box P-991, Troy. Ohio.

MEN Motor Fouled Burn Oil Va ves Click? Save Dollars With "Trucker's Secret." Ouscantees Better Performation. \$2.00 Postpald Random, 212D Newcaster. Byracuse 4, New York.

1909-1934 PORD parts. Illustrated catalogue 500. Mark Auto, Box 9B, Layton. New Jersey

1969 EDITION. It's New! It a Different! Get world a largest auto accessories and parts cataing save up to 50 35% pages, over 100 000 tems for 1920 to 1959 midels including Hollywood accessories including Hollywood accessories in hometyling and Hi-Speed Equipment All parts and accessories for all cars and trucks. We have that hard to get part, Jam parked with barga as Completel, I'm raied Send 25c (refundable) J. C. Whitney, 1913 PS-9, Archer, Chicago 18. In

JEEP Owners Attention Free Wheeling Belective drive hubs for your front drive axim only 439 95, Postpaid Tractor Supply Company 2700 North Haisted Street. Chicago, Illinois, Also available at any of our 40 branch stores

CUSTOM Radios For 1936 Fords Mandal 434.95, Push-Button 236.95, Nordic Rudio Box 583, Evenston, Himols

RING-Valve job while driving \$5.90. Eighth successful year Yellow Cab testproven. Free details. Motatoy, Grantham 27, Penna

4 AMP 6-12 Battery Charger for home or shop Designed and bust by leading U.S. rectifier engineer 5.3 93 Postpaid Money back guarantee Addem Products 1309 N Betty Lane Clearwater Florida.

USE THIS HANDY INDEX TO FIND WHAT YOU WANT

Advertising Agencies for Advertisors I the transit I par H or A Indian Corols A orally I to a first owner I of the are I of the are I of the are As at on	55 40 50 50 50 51
Pleate Our board Motors III Bu *** Complex And Joseph Etc. It has a consequence on Management Same	11 12 113 113
Due ft Woodpuple	30
Carboran Sthern Suppliers Car of L are up a Year Car of L are up a Year Carboran C Santa in Charle India Carboran C Carboran Carboran State Suppliers Carboran State Sup	34 10 34 20 46
Properties de le la	47 60 17
Piturat scal & Instruction Pire test Minister A bris tement task has Statemen Tite	48 7 10
Farm Mach negs Fare with R I or Fare lawers sea For the Harris Formula Plane (Re	10A 14 00 71 60 30
Golger Counters Treasure Finders	77
Motor Wanted Describe if the safe has non if the safe has non if the safe the if the sa	42 44 11 65 24
Inventions Wanted	61
Jokes Gaines Note the Etc	24A
Live flat:	18
Machinery, Tool Sum tes for Marie Tricks Putties I on the formal Presidence of the Summer Marie Take Office on the Marie Take Office on the Marie Tool of the Sum tes Marie Tes Biercie & Super ce Music bond Writers & Hearts	9 75 71 70 64 77 33 4
Of Interest To Women Onl Good Jewele) Watches	70
Patent tileeners Per serai Proces Fin shing Photocondes Etc Piores Proces P	50 50 13 40 57 58 22
Rad a TV Supr as & Supr men from a Supr e Suprement sand sand sand sand sand sand sand sand	36 80A 55
Se once & Themistry a or as Section by the section of the Princip Tackle.	31
S one Collecting	15 28 798
Tallooing Supplies Trees Shrul - Roots & Herbs Tr onometers Typeariters & Office Machines	75 30 93

Wanted to Buy

We day Saldering Western Merchandise

RING Valve Job' while driving Lachapenes Only \$3.00 de ivered World & or a patented product of its kind Over fourteen successful years Money book guarantee Pres information Joe Dillon, National Distributor Box 22312 Bridgeport, Ohio

SIRENS, Air Horns Lights etc! Free Catalog. McCanna, Tarrytown, N Y

PREE can saver Power secrets! New car every year only \$200 etc! Research. 2 W 25th St Baltimore 18. Md.

CHEVROLET VI engines Racing squipment Catalog 50c Ledbetter Enterprises, 1015 17th, Texarkana 8, Texas.

ATTO TRADERS

31

BUILD Expanding eight fool transfer Accommodates five Literature 10c Fra-Mar Company Wilmington, Massachusetts,

MOTORCYCLES, BICYCLES AND SUPPLIES

RECONDITIONED Motorcycle Motors. Chrume accessories. Complete stock Indian parts Expert rebuilding Fast service. Indian Motorcycle Sales. Kansas City 27, Massouri

1000 MOTORCYCLE Bargains Parti-Equipment Repositioned Automobiles Calalog 15c. Bunico. 146-PS Covington, Virginia

SERVICYCLE 120 00: Whexer Motor-bike 125 00 Cushings materacecter 125 00; in dect acto 125 00 Rush 25c 15c first class mail; for new catalog 29d3 listing many other amazing bargains in inctors, midgel cars, motorscooters motorbikes, construction plans. Associated, Box 514, Toledo, Ohio.

MIDGET car \$15 Cushman motorsecoter \$15. tear engines Whazer engine \$10.
Briggs \$5 Whazer majorbike \$25 Bersaevele \$45 (majorder only) Bend 25c 15c
for Pirst Class Mailing) for DirectoryCalalogue Number \$1, listing these and
hundreds of other Bartains in indiget
cars motorsecoters, humebuilders parts
plant, etc. Midget Motors Directory, Athens. Ohlo.

CHILD'S Buddy Seat That Slips on Bicycle Crossbar Build From Wood Scraps - Detailed Plans \$1.00 McKnight, 52 Kentucky, Sadons, Cultornia.

AVIATION

PLYING Platform. Three Drawings \$2.00. Rotron. Box 573-M Beliffower Calif-HELICOPTER. Kits. Plans. Free Brochure Adams. Box 6042-N. Lakewood Calif

PROPELLERS piens, supplies for air boats and showplanes Latest designs, prompt delivery Catalog 25c. Baiks-Maxwell Box 330.G. Ft Worth 6, Texas.

DUCTED fan design Used in Air Sleds and flying platforms Specifications and a pages of draw ogs \$2.00 Tyna-Turbins, Box 11258. Phoenix Arizona.

AVIATION Surplus Bargain Catalogue. One Dime. Buz 12PS, Thomasville, Penns AIR Sled Plans. 7 views, photos \$5.00. Aeromobile, Neponset. Illinois.

TPA

ASTRONAUTICS

GRAVITY intest undisclosed theories and information, \$1.00 G and P Research Lab Box 6'4 Br arol, Tennessee

ELECTRICAL SUPPLIES & EQUIPMENT

BOOK 206 Electric Stants \$1.00 Cuttingson, 26275 Arastradero, Los Altos, Cal-

REWIND motors yourself Simplified Instructions and catalog \$1.00. Modern, Box 8715, Kansas City 14, Mo

APPLIANCE, Lamp Parts willing de vices. Wholesale prices. Catalog 50c Lamp Specialties 322 Washington Sc Newark 2, New Jerse

LAMP parts. Wholesale Thousands of | FREE Lifetime Fiberglass Boat Coaling Stems for repairing converting Cutaing Information | king Fiberglass Box 5273 25c Brown Lamp. Box 305-D, Clayton 5. | Minnespolis 7, Minneso's Missouri

APPI IANCE Parts - Accessories Wholeanis. New Paintand Ca a was 25c Seco 26 South 20 Street. Birmingham J. Amberne.

ELECTRO-Scribe! Engraves all Metals. Chicago 43.

WEI DING, SOLDERING

WELDERS, 110-220, Welds 14" Estate
Werris, 1070 Inner Drive, Schenectady New York.

MAKE Difficult Weid by Jobs Easy New copingled have need bookiet to be bow Send 35t haroun to Arcult Co Box 431 Laurester Obto

BUILD or buy efficient inexpensive 350 ampere welder Quaranteed plans 25c Free welder discount catalog LeJay Manufacfurling, Minineapolis, Monnesota

MACHINERY TOOL SUPPLIES, ETC

SEND your drills, taps, routers, saus, era Sharpening Bervice Northfield Milera. Onto

NEW design machinist tools. Write Campbell Tools Co., 1414 Barciay, Springfield. Onto

TRIGONOMETERS

ENGINEERS. Draftamen, Students St 25. No C.O.D. Trical, Box 57, Buffalo 10, 100

10 ENGINES, MOTORS, ETC.

Diesel Injector Parts and Puel Pumps Wanted GM53-71-110. Mayer, 7120 Carnegie. Cleveland 3, Ohio.

HEWIND Motors Yourse'f Complete Instructions, \$1 00. Lewis Mig Howell 11 Michigan

NEW Engines, Clutches, Oear Boxes Racers, Electric Motors Harga as Cata-log be Loren P sage a Da in Hanois CHIB-

FARN MACHINERY 104

SENSATIONAL Outden Tractor Hoes between plants and rows lor we up straw berries Elmina es ha dine as Standa d in size yes entire different Palent? 7 42840 Also tills Fantasite offer to first few inquiries. Auto Hoe, DePere 66, Wis-

11 BOATS, OUTBOARD MOTORS

NEW used rebuilt marine motors. Ma fahe conversions fit ngs Free Catalog Btokes Marine Supply Dept 23 (and water M. h.

SAVE Save Save' World's Pinest Boat K s 25 less Saturaction Guaranteed Write for free color catalog Dept PSM-259, Talt Marine Woodcraft, 636 19th Ave N. E., Minneapolis, Minnesota

KIT Boats in molded Fiberglass or preassembled plywood. 50 Guaranteed models, \$4. 75 up freight paid easy terms Free catalog includes hardware fiberglass sup-ples trailers. Loger Boats, Dept. K.s. Mitmespolis 20, Minnesola.

38 POPULAR SCIENCE SEPTEMBER 1959

BOAT Plans-Poll Size Patterns-Frame K to Modern Inboards and Outboards for amateur builders Complete Nes Ca alog 9112 Rosecrans, Benflower Cant

FULL size, cut to shape boat patterns bluepoints 715-36 feet Big new 83 ug il-listrated Bulld's Boat Catalog of Naval arch ect designed Crusers Punabouta, Sk.7. Outboard Boats Sa ng Ra ng Houseboars 500, "How to Build a Boat" Book e \$2 50. Hardware & Equipment Calaiog \$2 00. Cleveland Boat Blueprint Co Dept. A-77, Box 1651, Cleveland, Ottio

INCREASE outboard speeds 30-40 same mo or at cost three to four do are Money ba k guarantee Send \$1 for p ans Bayinb, But 21 Cambridge Maryiand

FREE Lifetime Fiberglass Boat Conting

FIBERGLAS Boat Covering, wholesale prices Free literature and samples. Seifert's Bux 31X, DePare, Wisconsin.

BODY-BUILDING COURSES, JIL JUNI & ATHLETIC EQUIPMENT

BULLD powerful arms, thest should a 22 exercises \$1 Ponsad, Box 801-C 110 Market, Wilmington 99 Decaware

YOURS-a body I he a Oreck God' Stat-ling amazing y Quick New the hod ex-paired in free It e as a Bend name and address to Devel O Fies 1807 W Magnot a Bond Burbank. Ca forms

FREE Muscle bi. Idang apigrenal an Bedytone, Box 438A. North Manni Plazida.

BARBELLS, Dumbbells, Courses Appafatus, Booklet 106, Good Barbell Co., 8 am S. an Arkansas.

PUSHED around? Don I take nonsense from buses Surprise them Fas wengen him Police Juditsu Complete fulls h ustrated course to one volume as raught priore a d armed forces See d \$1 to # Satisfact in guarante of Books Publishing

WIN Fighting Clean Or Dirty Entr Thirty-Six Secret Enockout "Blows" Without Pats, Ten Official Police Jie Jims Holds Ste Overpower Bullies, Thugs, Vin-lent Demented Or Drunken Persons Twice Y or 5 r Amazing East Learned Home Study Course B. World Fath on Instructor Who Has Private to Take ! His Ca relied Office Price Jin Jino To Total sands Poice And Armed Forres-96 I ustrat one at 00 Postpaid Satisfaction Guar-autred Obtainable Exclusively Direct From Jorgensen, Box 5063. P895# At her Jergen Sea, ie 7 Wash

FIELD GLASSES TELESCOPES

DYNASCOPE emaz ne world famous reflector telescope Request free brochure Calerion Dept DS 64, Hartford Conn

FREE Catalog e' Thousands war surplus optical bargains Leases Telescopes Binor and etc. Serid \$1.00 for 10 Lens Hobbs of Ser and Prosect buch et. G Jacgers of West Merrick Road L p.

BINOCULARS Telescopes Microscopes Terrific values \$1.95 up Request the money saving catalog Crite in Dept 5 83 Hartford Conn

M Charle WAR Surplus barea lenses instruments, te es opes bin a cars nomia telescone como W. de pre est optical market place. Send or bed her a Osean kit and big abstraction book er Stock 2 CN Write for the along CN Fire Edmund Screetific Co., Barrington New Je sev.

BUILD your own Reflector Telescopes complete kits M rrors E epieces Tripids all other accessories Request free illus trated , terature Conterion Manufacturing Dept KP 37 Hartford, Conn.

AMAZING prices, precision binoculars ilder Sinocular Scienting restalor Polder ratalog free Dealers also write Prentiss Import-ers Mercury Bidg, West Los Angeles 25

REPLECTOR Telescope Kits direct from factory From \$7.75 Other optical do ityourse'f kits Free bookiet Esco Products, Oakridge New Jerses

REFLECTING Telescope completely assembled 60X Guaranteed Observatory clearness, Free Information. The Bkyscops Co P O Box 55 Blook, yn 23, New York

STAR Atlases astronomica, books free list. Herbert Luft, 69-11 239th St. Faushing 64 N Y 116 54 N

EQUATORIAL To escape Mounting ex-celling design ideal for telescopes 4" to 10" Details free upon request. Unique Products, 210 E. Rey, Okishoma City 10.

TELESCOPE Mirrors, lowest prices. finest quality Free bulletin, National Opti-cal Company 505 New York Avenue, Union City, New Jersey

COLLAPSIBLE binoculars 2x25, fits pocket \$2.00 ppd Hubbard, Lyon Benton Harbor, Michigan 1643

TELESCOPES bihorulars microscopesal, sizes Complete telescope kits, parts, accessories. Pres illustrated catalog. Buffolk Science, Mattituck, New York

SPORTING GOODS, GUNS, FISHING TACKLE, ARCHERY,

100 000 PRODUCTS Wholerals - Free Berd posteard Boon-O-Mart, catalog. Whippony 16. New Jeracy

PRES . . . Wholesais Catalog. Beads Spinners Lure parts. Sinker molds. Jira Reels. Finnysports, (PE), Toledo d, Ohio

CROSSBOWS! Hunting Bows! Factory Prices Jayco, Box 1355. Wichita, Kansas.

6 5HJT Colt Revolver 22 Cal. Short Ame 15 top No bis k \$12 50 POS Chicago, Import Associates, Dep t PS\$ 185 N Wabash, Chicago 1, III.

154 PACIE catelon | a real | Dream Book | for fish a mer by a free Ne chaft Com-

10 000 OUNS 1 -ADI ques Modernia Swo de Armour evers description Gant Catalog \$1.00 Agramonies Youkers 2-A

ACTUAL Abor givel Killer Bormerange 45 00. Actual Ceremonial Boomerange 910 00 John Lennon, 13 Marram Terrace. Swarmen. Bouth Australia

MOLDS for Fin erman a Sinkers Jigs Son ds. Casting and Spanning Lures. Pres Catalogue Breet & Molds. Tonawanda L. New York

5 900 BARGAINS, Srearms, binoculars, war retts catalog 50c. Smith Museum. Runnamede N J

GREAT for fishing and fun at parties Authentic flex ble actificial nightwalker Two for \$1.00. Limited Powell Brothers. Mountain Top Wilkes-Barre, Penna

JAP riflet altering American shalls \$6.00 Jap shells \$3.95, as soon 10c TP Shop West Branch 10. Mich.gan

POOL-Golf Build and sell profitable Crawford Amusements, Inc., Lebanon, Ohio.

CAMPING EQUIPMENT A TENTS

CAMPING Equipment, world's world & largest selection low prices Send 25c (print | nme address) for 160 page complete ent-(print alogue of Tents. Camping Equipment, na-tionel camp sites Guide & Camping Hand-book Morsan, 19-15G 50th Avenue, Long Island City 1, New York.

DOGS, BIRDS, HAMSTERS, RABBITS & PETS

UNUSUAL Pels. Snakes, Lizarda, Turtles, Culmun, Owls, Prairie Dogs, Catalog 10c, Ray Singleton, Box 361, Tampa 11.

PIGEONS-Fantails, White Kings Many Fancy Breeds, Cooper, 1213 Sc. 23nd, St. Joseph, Mo

RAISE Angors, New Zealand Rabbits Pishworms od \$500 month plan. Pree deta is White s Rabbitty Delaware Ohio.

PETS Every Description Sh.p Abywhere Catalog \$1.06. Jungisland, Floran, Ala-

LIVE BART

EARTHWORMS for Profit"-exciting new (1959) 128 page manual, profinely listrated . . . \$50.00 worth of vital growing advertising marketing money-mak-ing information on Redworms and African Mariterawiers, 42 30 postpard Money-back guarantee Free Lieuware Shields Publications Box 338 H, Monntain Home Arkansas

PHEE Laterature Big me in raising fishwo me and crickets We track you now to raise and sell. Breeder redwormsmarke ing Instructions. 5000-2:7 50. Med um size- 10 000-\$19.95 Carter barm-12. Plains Georgia.

APRICAN (Lant Earthworms, 100-\$2.00 500 47.00 Denters Quoten | Crark Worm Farm-V, Willow Springs, Manuart

FARMS, OTRER REAL ESTATE

FLORIDA-Nice homesites, \$345, 41 \$10 monthly, Poider Pres. Winires Vernot, DeLaid Florida

CANADIAN Exclusive Vacation Sourt-In Club Brants Members Fire C tage Non Useage Ad Fa . . . A. a. M. m bership \$10.00. Throughout Canada Except Vacation, Plabling Hunting Areas. Free Information. "Vacation Areas", \$18 Acton. Downsylew, Ontario. Canada.

NEW Strout Fad Cata og Just Out! Mutted Free! Barguing galore, 2549 propertain described 36 States. Count-to-Count Farms Money Businesses. World's Large-te 50 Years St. ice S root breaty 251-ZB 4th Ave., New York 10, N. Y

FLORIDA'S B. great Lot Value! Money Down! \$5 monthly Pull price only \$135, Between Orlando and Ocala Hig. adjoining taly, streets, electricity shows crarches whomis shoupping hen of 1000 takes World's best fishing With for Free photos. AS Huysman, Box 607, Belleview, Plorios.

TREES, SHRUBS, ROOTS, HERBS

GINSENG Goldensen Roots bring up to 6.4 gound Full information. P. Collins, Viola, Iowa.

12 PROFITABLE OCCUPATIONS

KARN Money At Home raising fish worms for as Backward, garage basement We buy your crop inquire Oakhaven-I, Cedar Hill, Trans.

SAVE Money Buy Whosesale' Free Cat-sing General Merchandse. North, 487-H Broadway, New York,

\$5000 PROM Raif Agre growing Genseng crop bought, Particulars 10s. Associated Growers Spering Manitoba

VENDING Machines-No Seshing Oper-ate A Route of Coin Machines and Earn Amazing Profits 32 Page Catalog Pres Parkway Machine Corporation, Dept 17, 715 Ensor Street, Ballimore 2 Maryland

BECOME independent with your own franchise busiless. Thousands earning balldsome shromes Request interesting facts today National Franchise Reports. farts today National Franchise Report PS-528 133 North Michigan Chicago I

HUSBANDS & Housewives Wanted Big money Spare or full time cake decorating and candy making Turn our kuchen imo a gold mit e No age, education amots Complete Instruction learn and earn at home, Write for free facts, Candy And Cake, Dept. 481, Failbrook, California.

OPERATE Collection Axency. Mine" opportunity. Lifetime business. Be respected. Franklin Credit, Rosnoke Va.

PREE L terature - Make Big Money Raining Fishworms and Crickets. Carter Farm-10. Plains, Ga

REPAIR Washing Machines-Il instrated Manual Explains How Details Free E Kay Washing Machine Supply, 5706 Third Ave., Brooklyn 20, N Y

LEARN Plant tubing at bome. Free information, American School Plane Tun-ing Box 707, Gilroy, Calif

SKILLED Photographers Money Opportunity. Write Brait Laboratories, 50 Court Street. Brooklyn 1. N. Y

TREE-mushroom pioneers! Spawn, In- 25 structions, \$1 00. Ohya, PS-162, Sigatenkusato, Japan.

BOOKS & MAGAZINES

GOOD Used Books, 50c-41 Free Lixts Editions. Dept. PS, Hempstead, New York.

BRITISH Book Bargains. Any subject Ca a or the Transbouga, Box 1-PT Wantagh, H. Y

BOOKS, old and new, on all subjects. Free catalog Suboma, Box 20725, Los Ange et E. Colifornia

TRADE by the books mayor her etc. in books with books in account to 25c. Smith, \$378 Windsor Late has Jose

ATHEIST Books, Catalogue free Truth Seeker Co 38 Park Row, New York &

1.000 000 BOOKS-10c each! Every subject under the sun' 2 catalogs-120 pages -dime Modern Mallway, Box 124 PSS. Stuy retant Station, New York City \$

10x BOOKS Serval mai subject of Tites 'Tiree ca army: Broke was Burganas (20 Emes Celumphie Burganas (20 Ph Chapar al. C. pur Ch of Tekas

BOOKHUNTERS All Subjects, Send Wants, Jahre Book Service, 183 Hazel-wood Drive, Westbury, New York

SCIENCE-Piction Book that yourse last 10c Weregolf Bookshop, he was I Free-

FREE Catalog-over 1 000 "How-To" Buoks, Arterati, Baldwin, Maryland

SAVE 25', on new books, Send wants Masshooka, Box 263-N. Chicago 50

HAPNOTISM:

HYPNOTIZE Self Others while unleep with emazing hispacile phonograph records, tapes Catalog free Research As a ciation. Box 24-Q, Ohmpia, Washington

FREE Blustrated Ryphotism Selfhyp-nests Calakerus, Write Hyphotist, 4321 Manuet Blus wood 48P Cantorina

PRFE Catalog* Hyphotican Autohypho-sis* Books. Tapes. Records! Drawer PS697 Ruidoso, New Mexico.

XHAY Mind' Hypnotise, one glance Quaranteed \$1.00 Wamsteker, Box 10 Ottery, Cape, South Africa

WHIRLING R pho Coin h photize othera in move es a th this fascouring passic Inventor. Complete with execut a secreta descated Hypnotic Aus PS 9 1133 Broadway New York City 10 PS # 1133

HYPNOTIZE Successfully I "One Word." Instantaneous." "Against Will" Methods Exposed? Complete Illustrated Course-Including "Secret Serve Pressure Tech-nique" \$1 00. Arthur Powier, Box 438. Woodbury, New Jersey.

'HYPNOTIZE One word figurersmap refund \$2 on stage Bar Maction or Happymaster Box 9300-St Chilengo 90

' X-RAY Olance." Entire course. Adults \$2 Hypnomuster Box \$300-XR, Chicago \$0

NOW! You can me mental telepathy! Hypnotise instantivit Read minds't Hypnotise' 2 Word | secretiv 3 % s' Seven 1950 techniques Free!! 42 99 P ain Wrapper Minter Box 32-P, Thiensvale Wisconsin.

HYPNOTISM. Autosuggestion. Guaranteed home study courses. Diploma issued Pree brochure, School Applied Hypnology Dept B9 250 West 57th Street, New York 19. H. Y

"TEENAGE Hypnotist" \$2, J. Pisette, 731 North Pulton, Presno, Calif

HYPNOSIS machines, books, suggestion records since 19-2 Wrate, Colons, But 67, Appalachia, Virginia,

JOKES, GAMES, MOVELTIES, ETC.

3100 NOVELTIES Jokes, tricks, gadgets. fundations, hobbies, Hig catalog 10c. Johnson Smith D-487 Detroit 2.

MAGIC TRICKS. PUZZLES, ETC.

WORLD'S finest professional magic Joker novelties. Giant illustrated catalog 10c Top Hat, Evanston 13, Illunois.

WIN, Dice, Carda, Cutalog 10c. Book, Box 671, St. Louis 1, Massouri.

500 TRICKS—1959 Edition now ready! Contains attest, best mayie for pocket, sub stage to by 10c Douglas Magiciand. Dept 12 Datum Texas.

1000 TRICKS You Can Do' Gont Lilustrated Processiona Man and Full Cata-log, 100 pages. World Famous, Now only 25c Five Sample Truk House of 1000 Mysteries, 201CW Pinewood, Trumbuil, Connecticut

PREE Trick and Magic Catalog 25c. Castle Magic, Box 92-PS, Jamaica 25, New

1000 TRICKS pocket parcor, stage William Frest Magic Catalog (400 pages, 1. 4 Kamer's S-1311 Walling, Physics

FOUR clever, new practical jokes, \$1 00. Dept. P S. Box 425. Connersy, ile Indiana.

MAGIC Tricks Book \$1. Be Party Lave-W. e. P. er Cutarogue Ma iur. . 200 Avenus H. Brook, yn 30, New York

MAGIC catalogue 25c Eagle mag.c 713 South Third Avenue, Minnsepolts 2, Min-

COINS & LURIDANCE

60 SPLENDIDLY Amorted Coins, \$1 00. Oddehob, Box 442 St. Louis, Missouri,

NEW Coin Album holds 800 Pennics. Nickela, Dimes, Quarters. Gives number minted and approximate value each coin Guaranteed, Postpaid, \$2.50, Legoo, Box 0023, Arangton, Virginia.

REVISED Coin Barga ii Cutator 25c De ar collections 7 I lab re s), 6 Liberty makeur (4 Maran dines 12 Morant quarers (1 Moran (all)—all tive \$4.50 Pric s-pa d set \$1.00' Sul-man 128-Bill East (to, St. Paul 1, Min-

EIGHTEEN Different Incienteed Cents 92 00 Bargain Lists Fire ha ers. 1000 Lineka Jubinson City, Tennessre

COIN Magazine. 200 pages. Sample 40c. Numismatic, 7330 Milwaukes, Chicago 31

HARE 1880 to 1885 CC Dollars, 65 00 ea. Coin Catalogue 25c. Shults, Salt Lake City 10. U.nh

COMPLETE U.S. Com list 10c (Refundable. Bornes offer included Economy Sales. 156-C Deat Managed, Massachu-Ecoto stry

FREE List! U.S. Coins Lowest Prices. Hugh a Coins Hickory North Caro ma.

EIGHT Different Indian Cents \$1 00. Co lector's Bargatas, Box 254A, New Hope,

INDIAN Cent plus Bergain Lists 10c. Hutchiuson & Box 4747, Philade-phia 34, Peans.

LINCOLN Cents 1913-8, 1926-5, 1922-8 1924 S 1921-8 1927-6 1928 S, 933 D, Complete lot on y \$3.00. Berry Box 306, Westminster, Cant

U.S. coin hat 10c Cuntains over 100 Uhistrations over 5 000 de guifus bargains. Sconey 360 Washington Boston 6. Mass

BRILLIANT Uprirculated Mexican #1ver Domara 50c Early Three For \$1 00. Bargain List With O der Universal Services Box 6 A San Autonio 6, Texas

32 PAGE Catalogue, Coins "Wanted" List--25c Refundable, Joiet, Roslyn Reights N. Y

LINCOLNS 25 Different 1909-1939. \$1 50. DeWolf, 2041 Manchester, Cardiff, Ca formia

NEW! Whitmans 13th Edition U S Guide Book \$1.73 Sadler, Cumberland Oap, Tenn

SIXTEEN page price list of USA and Canadian coins free. Selling prices un thousands of coins and supply items. Brysun Inc. 612A White Toledo 5. Ohio.

INDIAN Cent With Price List 10c Bald Come, Delance, New Jersey

ANCIENT Roman Imperial Coins Catalog, 200 photos. 35c. Homan Coins, Box 393 Bellmare N Y

20 DIFFERENT Foreign coins, 5 Canadian tents, and 5 Brilliant Lincoln cents \$1 00. Catalog free Joray s, Shouns, Tenn.

28 STAMP COLLECTING

U.S. Mont Pamous Americans, 1c, 2c & (2) stamps Special 2, 50 Free ast Books 2,23-T Avenue E. Brooklyn 25 New York

225 STAMPS For on ville! This mammoth value through A rmaps Pulls and stamps I im although Countries on moduing up to 350 each. Also Approved Mostic Scamp Company. Camber 55 N. Y.

507 WORLDWIDE different stamps only 250 Approvals. Miagastamp, St. Catharines 613 (A. ario.

UNITED States commemorative collection containing 33 different -- 10c Approvna White 516-W Avenue L. Brook., in 20 New York

1000 DIFFERENT Worldwide Stamps \$1 00 Valued over \$20.00, Universal, Box 4, Kannaha 6, Wasconson

WOW(110 All Different Germany 10c Zeppelina, Semi-Postala, Airmaila, High values, etc. Giant Catalog, bargain lists included with beautifu ampional James town Stamp, Dept. AssPS, Jamestown N. Y.

103 DIVERSIFIED British Colony Stamps only 10c. Approvals. Misgastamp. 61. Catharines 672-A. Ontario.

AMAZING Offer! 200 U.S. stemps—including commemoratives, assumate, high denominations to \$1.00—only 10c to Applicate free Marie Stemp Co Dept. 55 Camden New York.

ALBUM only 1001 Hundreds of spaces' Stem; mart Company Hestiond 1, Con-

102 DIVERSITIED Worldwide stammes 10c Approvan Linstamp, 5t. Catharines 6:8 Octavio

10 DIFFERENT U.S. Blamps. Includes 19th Certia Commettee a tres. High Values. Plus 1943 Flag Stamp of occupied Nations. All for only 25c. Approvals Included Widet Co. Box 314-Y. Yorktown Heights. N. Y.

NUDES set (4) - Unusual Approvais 16c. Atlas Eisenhower, Racine, Wisconsin.

FIGTE O and Barcain Catalog—New Er. in int og thousaids of barcains including U B and B N A stamps packets in stores albums accessores and supplies sent with beautiful approvals Jamestown Stamps Dept ESPS, Jamestown S Y

25 DIFFERENT large American Commethorat see 10c W h spitt as Lin 1 amp St Catharines 6.5- A Onia lo

WORLDWIDE, 50 all different absolutely free, just to introduce our incompany the approvals. Kent Stamp Company GPO Box 67, Brooklyn, New York,

25 ATTRACTIVE Pictorials Worldwide different for Approvata Littatump. St Catherines 618-B. Ontario.

506 DIFFERENT Worldwide from Madagasear Macao, Outnes, etc. Cataloguing over \$15 only 35c. Approvals, Littleton Stamp Company, Littleton Q2. New Bampshire.

105 DIFFERENT U. S. stamps 25c. Approvals included. Shelron, Box 991-S, New York I. N. Y.

INTERESTING Worldwide Animal stamp collection for. With approvals, N agactump St Cather ses \$2 B Optage

PRIFE! Eight Sided stamp, Triangle Diam-ind, Mideet Mammoth, to approval buyers Plymouth, Dept. A-3, Beil, Californ a

52 POPULAR SCIENCE SEPTEMBER 1959

U S. Stamps, Glant Bergain Catalogue ; 15c Rayman, J5-VX Malden Lane, New York City 38.

100 DIFFERENT Stamps, 10c with approvals. Smith 500U Brooks, College Station, Texas.

EXCEPTIONAL, 125 different, entaloging \$3.00, includes triangles, commemoratives, 15c, approvais, Rocres, Box 27507P, Mamt 17, Florida.

GIANT-Size Issues Collection Lags Fire phase, set Brussels Fair O mp. a Jet A restt Bos beau Somail A man complete Romania Fings Theo set Diamond Prices U N set et plus by Samp I tionary and Approvate Ever 1 by Ite Stamper, Box 41-KP White Punns N Y

100 DIFFERENT Beiglum Pece. UPU Brusseus Par Railroad Stamps Free Ap prival A. Justin Coup Trylon, Box 168. Orts. do Fronta.

125 DIPPERENT U. S .- 8) 00 Approvals. Utechts 1141A North Keeset Ch. ago 51

WEIRD Dismond Shape Coffee Stamps, Lovely Plower Triangle' Pirel American big commemorative (steepland Idu. Jane etc., 90 w. b. app. oracs. Cap. tal. Stamp Co. Ferrisburg 19 Microgan.

OCCANTIC Collection Free-includes
Tria ores - Early Lineed States A mais
— Colomem ray yet Br 13h C - es
H at Value Pictor au etc Com me Co
lection plus Big Lius raied Miccasise ab
free Seed Sc for posinge Oras 5 amp
Company Dept PH T rot in Cabada

DIAMOND Roosevell Prope Triangle Oreen a d Ana a 2, others Sc Approvals Langhorn Hot 2068P Lubbock, Tex

TWENTY Switzerland the: Pres Lists Prot of the 208 Andover, Pairton Va

of DIPPERENT, United States, British French State b Combes Transfer E. Oc. Worstwide Approvals, Total Arts Milford, Connecticus.

Olant Approvais Thousands D Serent is and 2s on h Watts Stamp Exchange 7006K Patragut, Chicago 31, Ill.

CANADA Mint Royal Visit and Seaway one for approve Physics 658, 11th Ave Mist car Canada

STAMP Finder mabling you to instantly identify all d Tout man a and the correction they come from World Map locating stamp leading countries, and Encyclopedia of collection terms at for only by Approxim Coulath. Bethieheth \$2, New Hampshire

FREE ' Beaut fu stamps prir ed Could Seiter 26 at e's Approva's Decir 30226 Westpha a Detrut 5 Michigan

100 WORLD Wide -10c To Ap. carts Reques 18 Foreign Approvals I luting 1634 Chippendale Houston 14 Texas

PREE Sports Flowers Triangles 25 others Approve a Marrey 1672 Jophn Baltimore 24 Marriand

DEALER Swapper Trader Buy For Less Write Sn in Company Box 18-PS Hadwastree Jamusca West Indies

122 DIPPERENT Worldw de Plus 66 Different U.S. 25a. Unmounted A. Casto. Box 257, Dunbar West Vigura

PREE to ted States Park 1 strated Last First Coner 10 Discount Semina a 45-5 Bromfield Boston, Mass

TERRIFIC Value Eight Complete Mint Sets 16c With Approvals, Beaties, 50 Girosaar, Islington, Ontario, Canada

SURPRISE Mint Set Pree For Introducing Bergain Approvals. Postage Paid Both Ways. Arnold Miller, 275 East 35 Street Brooklyn 34, M. ?

UNITED Nations First Three Free To Approva App. or to Morels 201 Femmore 5t Brook n 25 N T

OLD scarce U & seconds on approval Siightly defective, bargain prices. Hearnfeld, Clintonhill Station, Newark 8, N J

ECONOMICAL 4-3c Approvals, 33 000 varieties, Dresel, Box 128-T, West Englewood, New Jersey

1000 DIFFERENT, \$1 00 with approvals. Golden s. 6721 Eastwood. Philadelphia 48 Pennsylvania. PREE! 50 Different Portuguese Colorful, inexpensive Approvals. Elithert, Box 11 Enthert Indiana

UNITED States Approval collections. Enclose 10c. Peterson, Box 31, St Paul 3

100 OLD U.S. Stamps between 1861 and 1935 \$1 00. Rousch Stamps, 51 Chastrut, Manage d. Of 10

es DIFFERENT U.S. (30 Commemoratives) 25c. No approvals. Seidenberg. Appleton, Wisc.

LOOK! Six Different Queen Elizabeth Mint Setal Antigua, Malta, Virgins, Etc 21 Birotors 25c. Attractive Approvels! Gampan Stamps. Box 831, Canton 1, Ohio.

U.S \$1, \$2, \$5. Special-loc, with approvate Servers. Box 24, Bay Station, Broak in 24 New York

LAOS-Beaut 'ai, 'Lant Size Multicolored Mint "Elephant" Stamps, 10c. Approxim Clebia d 28A Wratwood Drive South, West Orange N J

14 000 DIFFERENT Amazing new plan bur do total o see in existed a law courtr by totality Obl. 50c week y Free datalia L. O. Ware Stealey 10 Conn.

TRADE your duplicates toward our approvals! (Poreign only.) Complete information, 10c, Variety Stemps, Box 94-8, New on High ands 61 Massachuse to

Fire vs uable concernor Scott a International and Master Global albums—a gold mine of value all free when you buy our sensational fortism approvals. Topval Box 486c, Redlands, Calif

PREE Samplet Interesting, Informative, Bluetrated, National Stamp Mays, Anderson, South Carolina.

SURPRISE World Packet, Free With

Collection With Adult, bargain approvate Rush 100 postage. Philatelics. Dept. TE New Parts N. Y.

FREE! 50 Different stamps! Approvals 10c Handling Marford, Box 43, Queens Village 25, New York.

1000 DIFFRENT wor dw de for appro al Bu era Only Jacobsen, Crompond. New York

PREE! 25 Easpt Sc handling Approvats Benet Stamps Hazet Park Mich gan

POLYNESIA girl, Ryukyu Bon, Chiang birtida), Clerico montanoma, Liase, musiciana, Ghana Neruma, only 100, Albuma, ca aloga, many others free our approvala buyura Bell Stamp Service, PES, Bell, (a. ornia

6 DIFFERENT US Astmala free? Aptional accumpant Dec. Big 9268, Or-

BUSSIA 28 DIF Unused 13c! David Builey, Box 5021, Los Angeles 35 Cauf

U.S. Catalog free, Contains almost 1909 Bustrations; over 10,000 delightful barga as Scone, 360 Washington, Boston 8, Mass

PENNY Approvats! Regardless Catalogue K.oster, 1184-52nd St., San Diego a California.

1000 WORLDWIDE, cart catalogue only 50c. Approvals. Samport. Cyland Accure East Palestine. U. D

PREE Sets Interesting Approve a Rose's, 56 Hunt Avenue, Yonkers 2, New York.

FOUR complete Christmas sets fres with a 'rar we approved Stamp Imports Peterboro, Opusrio, Canada

PREE! Fifty Different Request Approvals, John Schuster, 201 Sandpiper, Plays Det Rey, Calif.

MINT British Colonies Collection | 10c Adults only, Outstanding Castom Approvais. Westgate, 5 Centre, Hempstead, New York

UNITED Nations Mint 13 15, 17 41 00 Three Ic Envelopes 3, 00 Cutsquare .5c Obsolete postcards, 15c, Lists, Approvals, Teddie, Crystal Beach, Florida

POREION F D C's Mailed direct. Personslized around the world service. Brunsey, 200 Main, Peoria, Ili

STAMP Cleaning Service — Looking through bulk mixtures of stamps on paper" for high values or a find "is very interesting but the handling of thousal do of these is both to notonous and time-consuming Sava yourse I thus dradgery by sending those statings of paper to me Each lot is processed separately all paper being removed from the stamps. My special process estimates attaining all dreaming dead me a trial lot I will actual acque infined stell and its a few data advise you of the total weight processed and the total charges. All attaining will be returned to von primptly on reversit of his charges. 3 has or less \$10.00 per in -over 3 lbs. \$8.50 per in or by contract for large quantities in aptend deliveres. Minimum tharms. \$10.00 Paul Schools. \$34.01d. Parm Rd., Pittaburgh 34. Pa.

PREE Same Stamp Tongs Advanced Collectors Use. Also Stamps Cat \$2 Approvals 10c. Reid, 441 N. 6. Alientown, Pa.

500 MIXED U.S. Stamps 15c. Wright, 301-P Measty Hagerstown, Maryland

US approvate Low prices Eagle Stamps, Romine Ave Pittsburgh 26, Penna.

up 10c U S. Approvad. K & B. Box (6). Brooklyn 23, N. Y

UNITED States Stamps, Wholesale—Retall Pricelist, Ormonde Doyle, Courtney,

HITLER Reads 18 Different 16c Approvals Jewells "Stamps", Tamaqua 3. Penna.

BARGAIN U.S., 100 different 25c. with U.S. approvals. Stamps, Kennebunk Maine

CANADIAN Mint stamps on Approval R sot, Tremers Ormaton, Saskatchewan Canada.

PREE United States commemorative first day cover plus Xmas stamp packet perforation gauge hinges pricelists. Bend 10c, handling Loral Stamps, Box 22C Cambria Reights 11, New York

5 MINT sets 10c Approvals. Gotthardt. 1202 Hunter, El Paso Texas.

ANTIQUES, RELICS & INDIAN GOODS

SCALPING Kn.fe. Fint Thunderbird 83 50 Cataing Free Arrowhead, Gienwood, A. Kansan

PIND buried battle telles rotte salver uges Trans vor and M Scope electronic to gene Outranteed From \$50.50 Kasy Terms Free Culation histor Research Dept C-2. Pain A o. Cantornia

SELLING 100 000 ancient Arrowheads Spearhands. Tomahawks, etc. List free. Lear s. Clenwood, Arkanesa.

BOOK Relic Catalog 50c. Fifteen Arrowheads plus Spearhead \$5 00. Tilton Reuce, Topeks. Kansas.

36 MINERALS & PRECIOUS STONES

ILLINOIS - Rockhounds - Visit Rockhound Paradise. Come Early. Schmagate \$1.00-Asurite \$1.00. Heike a Agute Shup Welsona Lancia.

EARTH Science - Rockhounds National Magazine Subscription 42 00 Namuse Inc Box 1357-PS, Chicago (00), Ill

GET Free Catalog no serious rockhound, seem cutter, jeweiry maker, hobbyist or craftsman, can be without. Full of bargains exclusive items, low prices from largest suppliers and authorities in the held. Free . new catalog just off the press—yours for the asking! Write Grieger's, Dept C 14, 1813 K Walnut Pasadeus California.

GEMCUTTINO Silvercraft magazine Learn to cut gems make jewe rv Ads give sources equipment, arms for rutters conlectors. Free literature. Sample copy 25c. Lapidary Journal, Del Mar 3, California.

SAPPHIRE and four more uncut gents, \$1.00. Ten polished gents, baroque-shaped. \$1.00. Pive gent has Landary catalogue 25c. O Brien's. \$1100 Wilcox. Rodywood 38. Calti

FOLIBHED Own Stones sent on approval to collectors, students schools and hobbyists. New England Gein Company, Dover 4. Mass.

1 HOBBIES, COLLECTIONS

INVENTING can be an interesting and profitable hobby Write for complete particulars. Itstitute of American Inventors, Dept 10 E at P at N W Wash 1 s on 4. D C

COLLECTORS Matchbook covers, 100 Different in used \$1.00 (at the 2.4 Alborn \$1.00 Charles Edelman, 1311-P East \$4, Cleveland 3, Ohio

WANTED - Cigarette tobacco cards Wrie Charles Stay hast Bangor Pentisylvania.

POCKET Billiards (Pool) 32 Page Booklet W o Pictures And Diagrams That Will Be Helpful To The Beginner Or Average Player \$1.00. P. Smith, Box 2282, Port Wayne Ind.

BEAUTIPUL Seg-Shrik 108 asserted \$1.50 Partpaid Va. bir s. 1305 M. Parkwood Harmigen I Texas

MATCHBOOK Album. Looseleaf pages, expandable. 144 apaces, \$1.00 ppd. Match Arbum 3650 Armitage. Chicago 30 111

SFA shelp consector a selection, pricess \$1.00 pustpaid. Javo. Box 13268. Tampa 13. Ploticia.

MANY Sen Sheils Have Value Other Withha Catalogue Hustraling, describing pricing over 1200 species \$3.00 postpaid Les Publications, Wellesley Hule \$1, Mass

COLLECT military medals. Iron Cross with ribbon. \$1.50, Purple Street. \$1.50 Catalog 25c. Hobbins, Box 71 A, Rocksway 94, New Y k

23 PROTO FINISHING, PROTOCOPIES, ETC

FAST Fulm Service Rodacoust processing or 5 75c P at to or 5 25c Black and White Exposure 60c 12 Exposure 60c 20 Exposure 51 00 Republic 5c. Rodachrums Actobaroms Ex acts one Minister 31 15. Finest Quality Mail Order Photo Service. Box 297, Watertown, Wascowin

Oll Coloring Photographs A fascinating hobbs or profitable sidebne for it seems to be an above Fast amplified method Free bootlet Mational Phino Coloring School 435 Diversey Parkway Dept. (28 Ch. aga 14 III)

A Triple Value Quality Price Service Culor or Black & White 12 exp Him & White 15 exp Him & White 1-50c 20 Ciff Photos 51 00 Him day Photos, Dept. 17, Box 666, Danver, Colo.

A 3-in-1 Value—Price, Quality, Service 20 Oift Photos—\$1.90. 12 exposure rolls (Black & White)—Sec. Color or Black & White Interstate Photos Dept. 12, Box 15, Autora. 15.

ElGHT Exposure Roll, Jumbo Prints 45c. Kodacolor Twelve Exposure \$3.41 Gems. Box 1601 York Penna

ENLARORMENTS: Eight 6xTs or Five Build's from begat res \$1.00 Wilset Box 015 Lattic Rock Ark

ROLL Developed 4X4 or 4X4 prints 2 exposure 50c, 12, 10c 5X7 prints, 8, 81 00 11 t 40 Hagner 1318 West Columbia Philadelphia 22 Puntsylvan a

TWELVE Exposure rolls are Wallets 20 for \$1.00. Lincoln Studies, Dept. L. Box 13. Lincoln, Nobe

50 WALLET Size Send Any Snapshot or Print \$1.25 ppd. Myers, 20 Cannon St., Thomasville N C

ENTACHHOMY Anacochrome 35mm processed \$1.25 Wallet prints from 8. des 25c Wodacolor prints 25c Send for free mailer kit. Acme Color Lab. Box 8025-PC Minima mus. Minimanta.

33 MOTION PICTURES, SLIDES SOUND EQUIPMENT

PRIE Blackhawk a big and catalog than 16mm, movies, I's? color sudes. Biggest according anywhere? Projectors, cameras supplies—big discounts that free every three weeks. 12 page newspaper nice barranal that Blackhawk Films. Darenport 13 lone.

MOVIE Camera Pilm 8 mm roll \$1.50 16 mm 100' \$1.00 Pres processing Better Pilms, 742 New Lots, Brooklyn, N Y

TAPE recorders Hi-Fi components, Steep Learning Equipment tapes, U usual values Free Catalog Drewner 60:02 174 Street Flushing 65 New York

MOVIE Film Pres catalog Eso-H. 67th Holly Kansas City 12 Mo

16c BRINGS big new Cine Manual for the 3mm-16mm Movie Maker Save \$55 on fresh B&W and Color Movie Pilm, all Home Processing Equipment, Superinr, 442-448 N Webs, Chicago 10

16MM Sound shorts, Tremendous assortment of features, \$18.50 up. Used 16MM sound projectors, \$79.60 up. Catalog. Abbe Films, 417 West 44th Street New York 36. Place 7-2219,

HI-FI, Recorders, Free Wholesale Catalogue, Carston, 125-PS Fast 55, New York Co.) 28

MI-FI components recorders take raccers Wholesafe tatalog free Audio Fair 1799hi an Avenus New York M. New York

PHEE Catalogues 5 000 \$-18MM Pl ma litter author at Panna, Greenvale New Y 12

LINCOLN Story complete in 500 color sides Catalogue and samper 35c Willenia, Box 1915 G Chicago 80

16MM Sound Fill Bargain Belietin Duquette, 97-R Snow, Fitchburg, Mass

.IMM Sound-Silent, Free Last, Torrington Box 74616-8 Los Angeles 4, Calif.

34 CAMERAS, PROTO SUPPLIES

PHOTOGRAPHY For Pleasure or profit Learn at home "restical basic train, at Learn established accord Free bonket American bestool of Photography 535 Director Parkway, Dept. 1756, Chicago 14, 1, 2,019

36 MUSICAL INSTRUMENTS, SONG WRITERS & RECORDS

SONCIPOEMS and lyrics wanted Mail to Tat Pate A sey line , 1460 lirundway, New York 19, N. Y.

SONOWRITERS Recording Company Wants new songs. Royalty basis. National sales, promotion if selected. No therms for majories Send majorial. Music Makers. Dept. O-51, Box 2507, Hollywood. California.

schools into \$551635 She e \$11 m., jon de lace tearly for New Songwitten being parts. And subject adults the located published a matter of largest from Interespend of largest from Interespend of largest from Interespend of a springer. From Send Nordyke Marke Publishers, 6000 Sunner, Hollywood 25PS, Caufornia.

SONGWRITCHS! Protect your ideas! H. id al. poems, songs Write for safe correct procedure! Bong Service, Dept. PS. 333 W 56th, New York 15

POEMS Wanted for musical setting and recording Send poems. Free examination, Crown Mask Company 40-P West 32 Street, New York 5

POEMS manted for musical setting. Established 1936. Urab, 2141 Bedford Ave., Brooklyn M. N. Y.

POYMS Wanted Immediately for Musical Setting and Recursing Five Examination Rush Poems Sometratters, Adjung Station Nashvine, Tempesses

PORMS Wanted for musical setting and reco using by America's Largest Song Bridge Send poems Pres examination Five Star Music Masters, 644 Beacon Building Boston.

ACCORDIONS—1980 Modein Lowert discount prices. Save up to 50% Free home trial Trades accepted. Big color catalog free. Accordion Manufacturers. Dept. 99-P, 2003 Chicago, Chicago 22

CHRISTMAS Cards With Music Designs Half Price Williams, 19 Hudson Street, New York 13

GUITAR Making, books plant, imported woods, tools. List 10c. Wildwood, 516 East 11th Street, New York 9, N. Y

SONOWRITERS, with publisher conlacts, want song ideas. Share rotal re-No feet. Send noems. Songwriters Associates, 1636 Broadway New York 19-P

COMPLETE Professional Music Service For Sungwriters, Colomba Enterprises, Box 4448 Burbank, Calif

I WILL Record Your Song Melodies Composed, Send Poems For Free Consideration To Wooten, 1568 West Seventh North, Salt Lake City, Utah

BEAUTIFUL Electron r Steel Gustar an one can build for \$1.00 Equals fines. Pairs \$1.00 Custom Electronics. Barard Nebruska

ELECTRIC Guitars, amplifiers, wholesale. Free catalog. Carvin, PSM, Covins. Cultiornia.

BAND Instruments, Save 60 c. Brass And Woodwind, Details 25c in Coin. Dottom Sales, Sliver Grove, Kentucky

84 PPLIES & EQUIPMENT

ftADIO—Only \$1.50 postpaid, complete hit of high quality parts, established and casy instructions. Coamic Radio, Box 11, Jackson. Michigan.

FIX Your Own TV the Easy Way, and Save Boy | Send 25c for lightrated TV Trouble Shooter Chart showing which tubes to replace. We'll include Clant W. Franc Ca and Street Plants on Parts St. event all d. Ph. re lines 7a > on T or terp 230-8 West 43nd Street New York City

GOVERNMENT Surplus Snooperscopes Mam Gent, Mine Detectors, Parabolic Reflectors, Telescopes, Picture Cutakes 19c Meshua Malden 44 Mass

CRYSTAL Radio Experimenters, Write to Haist, 305 Hope, Lakewood, New Jersey

HADRO Kita, One Tube Shortwave-83 to A. Band Re vier Emphone Ante in \$7.95, Crystal Radio 75c. Alliance. 2039 60th, Brookeys 6, N. Y

TRANSISTOR Radio. Pocket Size Portable 87 95 Postpaid. Free Laterature Alessi Same Main. P. O. Box 323, Yonkers

ELECTRIC Gustars amplifiers, wholetale, Free catalog, Carvin, PSR, Covina California

SUPER Sensitive Ministure Translator Radio, Complete Ready To Play. 33 28 Bushak, Box 131, Youkert, N. Y.

27 RUBINESS OPPORTUNITIES

IMPORT-Export opportunity profitable world-wide, mail-order business from home, without capital, by travel abroad Established world trader ships instructions for no-risk examination. Experience unnecessary Pres details. Mellinger X600. Los Angeles 36

676 WEEKLY-Rome, spare time, Simpl Sed mail bookkeeping Immediate in come -easy' Audital, 34757D. Les Angeies 34

11.000 NEW Prospects Daily Baby record books, shoes, sibures Seil ma kerder Use our literature. Write. No-Co-Ho-Captola. Ca. forms

TOTR envelopes addressed accurately reasonably Fast service. We have capable add excess in your city Grenway System, Box 556, Cieve, and I. Ohio.

NEW Home-Import Mail Order Profit an ty Your ma big stuffed with money? No Sed he No experience. No investment. We supply everything Free Details Mail Order Distributors (Import Days on) 13701 South Broadway, Los Angeles 61821 Calif

YOUR Own Impact Mail Order Business Deal with over 400 manufacturers, exporters of the world. Complete Import procedures, international drop-ship methods. Capital unnecessary. Free details. Associated. Box 2008-På. Sioux City 4, Iowa.

OPERATE profitable mail order business. Write Walter Service, 4158-B East 112th, Cleveland 5, Ohio PREE Catalog Contains hundreds of businesses larms and income properties throughout U.S. Canada Specify type and lora ton desired Deal Quect with owners I'd Busine Digest 1600 Hillhurst Dept 78-1 Los Asserts 27 Canf

QUICK profits, with no capital Take orders for magazines cour ness ours like want. Make cast, on the apit We think how with Free kit Get voors now Wite M.O egor Magazine Author Dept 341. Mount Morris 141.

EARN Money At Home raising fishworms for us! Backyard, garage, basement We buy your crop! Inquire Oatharen 42. Cedar Hill. Teass.

FIX Typewriters, Free Repair Course, Monte ope a ed Rezul 23, for be-4 replaining Free Course and Agency Appointment. Ather Taraptum, Pa.

CROW Orchide a home frontable facgreening Successive home protest even a saper as but removes a related homely retrict into orchide, but feed Free-late detail Octions, 100 & Vermous Lab Atgreen 6

MAKE Extra Money—Bis Cash Commissions plus premiums for you and your customers. Sell Advertising Book Matches and the Tenorams. Glamour Gata Maior and South offers. As said Quick daily sales, big repeat business free Master Eit makes selling easy—nut progresses a section of the selling of the progresses are received. Physical Chicago 19, Illinois

OROW I ring Ministure Power of a spice that he make a different plant is a second to be plant in a support of the property of

CAME Warden. Covernment hinter Forestry, Fark and Waddie Services and restors on opening Alistana Et in our dear to it goes a rea must be Comparational on Press Mr. of steel Ar Wall in Course Dept. 10 - 88 - 938 S. Labora Lee Argenes & Falsoria

SARN Good Money sharpening chain taws, scissors cutters, knives Free Munas Treyco, North Tohawanda I, New York

VENDING Machines—No Sching Operate A Route of Coin Machines and Earn Amaring Profes 33 Page Calakie Free Palaway Machine Corporation Usept 4-7.5 Envol Street Bastimore 2 Matyland

\$250.00 WEEK profit possible. Earn at home spore time with faccinating Printing method, \$5 starts you—send no money now Free Confidential Facts and Valuable Samples. Screen-Print SR Los Angeles \$4

MINE Raising information Iree. Complete. Lake Superior Mink Parm, Superior EE, Wisconsin.

MAIL Order! Succeed with your own Outranteed Profit mail order business No inventory We droughly and show you have to make big profit Write Officer \$15 Walrut Dept OFS, Philadelphia, Pendas, vania

\$100.00 WEERLY spare room. Raise redworzes scalless way Odorless. Charlie Morgan Box 116C, Bushneil, Florida

PREE Name Brands Catalog! Tour own high profit business. Sell Name Brands. full of part time. No inventory no investment. More than 2000 Name Brand items tower! who exists prices. We then jowery tarrerss. In It stells and to the power tools luggage missical instruments, gaiden equipment. Sporting goods, fort many offers a Phors of Name Brands Morand delast tareners of Name Brands. Morand delast tareners of Name Brands. Morand delast tareners of Name Brands Morand delast tareners of Name Brands. Morand delast tareners of Name Brands. Morand delast tareners of Name Brands. Morands delast tareners of Name Brands delast tareners of Name Brands. Morands delast tareners of Name Brands delast tareners

PLOK KRAPT Christmas Trees Barn Bis Profits spraying ordinary rhesp trees into beautiful colorful cashmete-soft specimens that bring 0 times only out tree cust Be Brit your area this Christmas Free Sample and booklet showing 56 O'her Ways To Barn Big Fick Kraft Profits. Plok-Kraft, SRK, Los Angelm 61.

53 00 HOUR-bome sparstime assembing pump lamps Easy Free Desaid. Ought Caldwell, Arkaness

then send for Harley Davidson Dealership Book on how to become a franchised dealer of motorcycles and a new line of motor scoolers. Here's a chance to own your own business with a very modest interiment. The youth market is beginning to explode and the next few years promise a chance to cash in on it. Write for free flustrated Dealership Book Today. Harle Davidson Motor Company, Dept. P.S., is likewise 1. Wiscostan.

PRANCHISES make profited Have your our touch able Ital has been man Outportunities rations the for distribution dealers agency operated by the June 10 manufactures agency operated by the second of the following service has been recommended in business books magnine and them were fewer articles it as the automated in business books magnine at a tree and the manufactures it as the automated in the result of the few of the first and the automated in the result of the few of the first and the grantiable franchise write today for the greating free details of this heapful service has small from the few of the profit service.

Mallerhillie Laws and Readarms. Mail rice Russes to her ma her out I with our bo Mail himselfed Mail of the Landkerning History \$1.00 miles her furthern a go flerent felices taken legal reg. of maller Hok Juli P. Alexahoria highly

MARE You On Will have expensive fees Local W. Firm it. Tenante House Puls non-a Box 23, a Water-on long

MOTEL—Resort Management — Qualify for hundreds fascinating, leasurely, wellpaid us a tire openings. Learth at home Free book a Motel Managers Training School PS90C 512 S. Servano. Lee Anscien 5

SHINE Shoes Without P h New invention Lightning seller N was gleath like a treat harm, so sent on trust Eristee 1 0 Ak on Oh c

SEEKING Success? I have very important proposition, Quarter brings partieuars. Ornacen DuQuojn Illinois

MALCORDER America a most unique no cost plan for beginners. Armstrong's 154 Darrington St. S.W., Washington 24. D. C.

HEAVY brown \$12 envelopes for mailing folias, manuscripts, photographs etc. 24 for \$1.00, 100 for \$4.00 Sample free. Tasker Box 3331-P Alexandria, Va.

PREE Literature — Make Big Money Raising Fishworms and Crickets, Carter Parin Plains Georgia

RARN \$20,000 A Year from your own hat? a der business at home Presed pregram Free details DeLang Research Box 52 C Burkington Itwa

OPPORTUNITY to earn \$15,005-\$30 500 annually Franchise protected Granted on \$12,500 basis. Live at home, No merchandase to buy Selfemployed. One of most recourts and non oppositive Harrell and for free explanatory booklet. Harrell and Company. But 8-D, Louisville, Lineals

BAKE New Greateless Doughnuts in Kitchen Sed stores Free recipes Summe's 3605 flouth 15th , Minneapolis 7 Mathemata

PROFITABLE Mailorder Operation! Write Vikari, 469-P5 Third Avenue, Self-Lake City 2, Utah

\$75 00 FIRST week in your own mail order business Complete Beginners Plan. Home operated spare-full time Everything supplied Washe's Service 2016-P-2, Channing FE. Washington 18, D. C.

SUT Direct From Factories—Appliances, Cameras Watches Free details' Cam Company 61:4PS-20th Ave., Brooklyn 4 New York

REPAIR hidraulic jacks — litustrated service manual \$3 M Free information Write R draulic Parts Supply, Sea 6164.

54 POPULAR SCIENCE SEPTEMBER 1959

FREE plan and personal help. Retired mad order opera or all show you how to start profitable home business N Cose. 2.1 West 49th Bradenton Florida

PRONZE Baby Shoes Instructions. Employed and Mountaine for general Exercise Supplies Free Catagor H. Pract Equipment Supplies Free Catagor H. Pract East First Los Angeles M. California.

\$5.005, MEN, Women! Work Home! Sparetime! Pres "Confidential Plan." Scott, Box 384, Orest Neck, New York.

WANTED. Men, Women, Raise bait for us at home. Pull spare time Doesn't take up space. We furnish everything Sherwood. Dept O-5. Monmouth, Maine.

PLASTERCRAFT mode. Routd tubber plasters, Socks, candle supplies. Catalog and manual free Jayhawk Plasters. Blue Routs Kansas

MARREL'S Everywhere, backe Artistic concrete birdbaths, pottery. Best coloring H me workshop, Hundred varieties Hollywood Comenteratt, \$527-N Wonderland, Honywood 46, California.

FLATE Baby shoes, jewelry, gifts. Bronze and colored pearl We finance home businesses, Booklet free. Wallamson, 1,029 South Vermont, Los Angeles 44

MAILORDER To Churches, Motels. Restaurants, Institutions, Complete, individual act-up not just mailuclions hermos Advertising, 132-O West 42, New York City M.

\$76 WERKLY addressing envelopes emping newspapers! Detailed instructions \$1, rejundable Cies Bounts. But 200, Great Neck New York

NATURAL Molding Rubber: Extra Thick, Free Sample, W. Wooley, 1016-E Donald, Peorta Hitana

FIANO Tuning learned suickly at home Tremendous field! Musical knowledge unnecessary Information free. Empire School of Plano Tuning, Champaign, Illinois (Founded 1835.)

\$100.00 WEEKLY possible from Amazing Catalog plan No selling Hoe, 2311M Marshall, Chicago 23, Hanota

4'ASH from Nawdost Tin Care Newspapers, Over 200 methods. Instructions \$1.00. Charles Company, 42-DPE, Norwood, Ohio.

\$24.70 TWO Hours, Manufacturing Concrete Products No Hearty Lar and Castings 1801 Premout Rapid City South Danota

PORTUNES in Formulas Circutest money-making idea book in the world \$00 pages \$3.35 Satisfaction quaracterd Free a crature. Rollin Hill, 20-E West Jackson, Chicago 4 Linnois

IMPORT-Export Business Made Easy Complete individual setup services not just hostructions, Hermes, 132-R West 42 New York t ty 16

PRYK work for yourself Ailen 613 PMA R Burnside Portland 14 Oregon

MAKE flexible molds. Cast plaques, figarines. Free sample. Tooker, 1945-A Fairview, Hamilton, Ohio.

KARN \$100.00 Weekly part time from your arm-chair and in one year you'll receive a Free Trip to Europe for two. No selling or mallorder Fun Pacific. Tibs. Box 505, Laguna Beach, California.

OPERATE proctable mail reer business!! Write Bond, 1637-R West Vernon Phoenix Arizona

LEARN Landscaping And The Growing Of Plants Start A Problems Bus resulted for Pull Time Free Information Without Obligation, National Landscape Institute, Dept. PS-99, 11826 San Vicente Blvd., Los Angeles 54, Calif

OFERATE profitable Bookkeeping Bersice No experience \$7,000 years post big Write' I bersy 210 PS Fifth Avenue New York 10 N Y

OPERATE profitable "low cost" Mail Order Business. Write: Liberty, 210-8 Fifth Avenue, New York 10. N. Y

MAIL Order opportunity magazine (cc. Moritz's Firmide Shopper, Saginaw, Michigan.

DOLLE! Dollat Dolla! We teach you to tepast make self all kitch Mind at home Earn white you seem Free infortnation. Doll Hospital School. Studio Philip 1981 1985 Sun Villence Blad. Los Andeurs 48 Calif.

YGAR Own home-operated business. Take over your stra us out Service Lastabutor Bres. of retal stores suppored Nationally advertised 30-year-old line pays up to \$20.00 hour Under \$100.00 for merchandless gets you started. For samples, highly successful plan, write Novo. 3856 Lancoln. Deak G-61, Chicago 13

LIPETIME Income! Typing, mailing Confidential homework Literature 35c Interstate, Dela Station, Albany 9 H Y

WHOLESALE Prices, Vitamins, Miher als. Herbals, Nutrational Products, Formulators, 1546 Southeast Canton, Portland 2 Overes:

CAMDIED Popeorn and Potato Chip Equipment, Eskins, Box \$33-B9. Springfield. Ohio.

530-560 WEEKLY addressing envelopes for severtise a frestructions as 00 refullable Ryco 219 Fifth Ave. State 2,03-W. New York 10

AMAZINO Profits making contrete drain tile De alla free Cestan Products, Cornella, Georgia

LIQUID Malaster Rubber Pres Sample Shelicraft Surplies Chance a 1807 C East Boad Jackson of all Fig.

FREE Book - How To Make Mones \$24 000 Yearly'! Christianson, Box 293-A. Schoneld, Wisc

EARN 65 000-613 000 Years at home in respectable field. He experience necessary No public contact. Nothing to grow or make Start spary time. Free expert guid an e-makes way grow last. Rush 4:00 for rismplete details. Satisfactions of Refuels Ct. onthis \$268 P. Piney Branch Home. Stiver byring. Marstand.

MAKE Durable building plastic easil Beautiful — 10, uses - 100 profit Bats Laboratory Kenza Carton Attrona

EVERYBODY Lakes Candy" — Mah-Professionally Rome (Our 48th Tear -Ragsdale Candies, D197, East Occups, New Jersey

NOW'S Time for Profitable Westlierstripping Write E-Z-Or (PS) 1808 Harvard Terr., Evanston, Ill

OPPRATE Profitable Mallorder Business, Write, Rockey Service, 8740R Water-works Rd., Norfolk 2, Virginia

LAND Owner and partners wanted, for community project. Ornsteen, DuQuoin filmots.

BPEED Profits. Squash Competition Write Knobbe Box 1"2 Chi aco 10 1"1

COLORGIAZED Concrete pottery made without mulds. Patented method. Cometery products novelties the Basement leak staining Money making prote to Book set details time Men on National Potteries. Orand Rapids. "Minnesota."

BOY Vitamins Wholesale—Personalized Label Avaliable Doctors Invited Ochsen Dept. 189, 284 Sewell Akron 19 Ohio

FREF Business. Franchise Protected Rave Own Office. Self-employed. Rationwide Travel Service. Details Free. Plants And Company Box \$1, Benham. Kentucky

MAKE 546 From Square Poot Plywood Jigsaw necessary Pres Details. Woodarts Bridgewater, Mass.

1001 MANUPACTURING Opportuni ties" Proc Pollo, Manufacturing Selling Instructions, Guidance, Alltooks, P.O.B. 465-8, Chicago 90

MONEY MAKING OPPORTUNITIES

DETECTIVES—Work home—Travel Experience unnecessary Detective Particulars from Write Wagoner, F-125 West 96th, New York 24

SELL Titania Gems, for more brilliant than diamonds, Catalog 10c Diamonste. 2420-S 77th, Oakland 5, California.

MAKE Money Writing Short Paragraphs Information Proc. Barrett, Dept. C 26 D. 7484 No. Clark, Chicago 26. EASY to start rubber stamp business at home at space time Make up to \$9.60 at hour without experience Paris free Write in Hiberia 1512 Jarva. Room CR 3-R. Chicago 26

START Rig-Pay business at home in spare time. No experie to needed to operate little table up maraine or broating behy shoes. Make 25-44 profit on every past Pau pai sed art five bend postcard to Mason 1513 Jarvis, Room CM-1-H. Chicago 36 Illabota

BICKLEST Spare Time Profits showing friends, neighbors beautiful Evans Christ-mas and Ali teens in fards East to take orders (100% p. oft with specia kit sent-on approva. It ruded Pres. 32 samples Personalized Christmas Cards on the Imp. 1 ed. 2 alientets Dispuss 2 Catalogs Selling Guide Write today New File and Art Publishers, North Abington, 352 Mass.

MFN — Women' Start Money-Making Plantic Lam naving Bus hear at home in space time Mate tail that rosts the beings back \$2.50 No canvas ing or se ing but ma orders being in \$20 a day We when fad particulars Free Rush name on post-rard to Warner Hoom CL 2 H 15.2 Jartis Change 20 15.

STOCK Market Profits! Proven method physicis densure nears present heavy tosses. Start amais—expand consistent y? Write Treasury, 700 Webster, New Rochelle F-3, N. Y

RARN More money! Know and capitahar on your abid to Five ! Q Test and information. Write Today! Associated Inatitute Box 6. Manhattan Beach 6. Callforms.

EARN \$15.00 spare time, showing paper or 'e t 'to inkmarter Marks an our'nce Everyore's a prospect! Send \$1.00 Comporte Sample Est. Plack Mig., Newark 3 N J

ENJOY independent income developing new product ideas, Free details, Price, 408 W First Genes, Ili

MEN! Make Extra Money Selling PastSelling Line: reasonably priced toys, gift
wraps greeting cards, collector's items,
household gadgets, Work your own hours
Extra income without changing rebs. Take
orders from colorfully illustrated free ratalog of 785 money-makers. Ho hig investment. No experience greeded, Samples on
approval. Write: North Star 5-737 Finch
Bidg. St. Paul 1. Minnesota

Space Time " Amazing new breit is gold mine of 33 profit crammed chapters on present community as see plans \$1.50 Arms Supply 202 E | 3th St. New York 2 N. Y.

NEW As Today Exciting As Wall Street Stock Market Game Four Ivers Direct Mones So a et Soard Ste Extra Do are In Your house Time Now Is The Time For Xmas Profits Send \$100 For Come And Details Schmid Game Co. 16" Van Sieten St. Paus 6, Minst. Satisfaction Or Refund.

AMAZING successes through franchises?
Secure our one or habe franchise business. Alert yourself to nationwide opportupities. They are published each month by National Franchise Reports. This is the ploneer franchise reporting service recognised nationally as the clearing house of franchise information. Send today for free interesting literature Nations. Franchise Reports, SP-526, 232 North Michigan, Chicago 1.

PABULOUS Profits Imported Bird Pictures Hand Made W h Real Feathers Free Bris burs 1 Ayrie's 4054 Gage-4. Bel -Gardens Cauf

HAMMER? Saw? D: 17 \$100 Weekly. Jett Box 422. Escondido California.

PREE L.terature — Make Big Money Raising Pishworms and Crickets, Carler Parm-11 Pishus, Ga.

OPERATE home Mult order Business Vosscek Printing, 4444PS Ute, San Diego 17 Calif

MAIL Order Business Avoid Insing money through errors of judgement Bred I was more about that by Arthur Simenary Scientific See of for free cary John Bishop, Box 153C Ojai, California

UNIQUE Stock Market Method pinpoints dynamic lanes, eliminates guesswa, t Spectacular results—automatics of Treasury, 100 Webster New Hockets P-2, N. Y

CAMERA Profits Pive Flans Photo Markets Only \$1 00. Groth. P. O. Box 266, Brone 51, M. Y.

MAKE Money Clipping Newspapers, For information write Newscraft, PS-942-E-Math Columbus 5, Otto

MONEY Making and Saving Catalogue. Write. Adams Exchange 210 5th Avenue, New York 10, New York.

SELL to stores. Buy profits, Samples \$1 00 Refue ind to studer (restine Products, But 42. Connersyste Inquara.

JIGSAW Owners. Write Edward Cook 51 Martin Avenue, Saratoga Springs, New York

CIOARETTES- Make 20 plain or filtert pa for Dr. Far s I ce Moberty, Box 911, Owenabore, Mentucky

\$145.00 MONTHLY with Jizzaw Details. Eliman Jie North Summit divita Faire. South Dahota.

\$30 660 WEEKLY addressing or resource for advertisers fractus man hardered date from the Research of the Research for the Res

EARCH \$5 000 \$15 000 Yearly at home in respectable field. Only 3 flours Week's atter-in needed No public circles no expensence necessary. Exceptions, but true high \$1 00 for consiste detailed plan. But sfaction of Re and Co ambig Erierprises. Lid \$266 Ph Piney Branch Hond. Bilver Spring Markand

INVISIBLE Reweaving \$5 in one hour possible reweaving burns, tears, moth-holes Space-Full time, Free Details, Skill-Weave, Dept. WC-138, 339 W. Madison Chicago \$

MAIL newspaper clips but daily for cash Ketchum's Advertising 1006-B Springfleid, Indiana

\$15.00 THOUSAND Addressing Envelopes For Advertisers. We make no faise cas man Other Opposition tes 100 Forms. Decam 250 Barrie Box 1247 Jamaica 31 F T

WANT Big, Steady Income? Grow Red Wigger Fish Worms Quarenteed Market - we pay you \$1.50 pound! Red Wigglers, Warsaw 3, Indiana.

TREMENDOUS prof a be man Book let, literature, 25c, Labranche, 30s Cagne Street House Quebe Carada

ROMEBUILT Rescopter Handbook Romebuilt Helicopter Director, Han-ebuilt Airplane Directory \$100 Each, Urshan, Box 4313 N.P., Sen Diego 4, California.

28A BUY IT WHOLESALE

NEW Multicolor Wholesale Catalog Housewares applicances, clothing sulver-were, cookware, luggage, binoculars, shavers, radios, phonographs, cameras, projectors, recorders, typewriters, newing machines, furniture, power tools to a sporting goods, watches, diamonds, jewel by, automobium, etc. Name brands, Burge discounts, Postcard Serbyco, Decatus 172 1, 1943

LARGEST Wholesale Supply Source in U.S. Get free catalogs. Parmiture, clothing appliances, autos and accessories, farm begannent toom housewales a took supples. Free details. Associated Wholesalers, Box 2066 C. Sloux City 4, Iowa

Bt y Who esale 100 000 Nations is Advertised Paidulia A, publies Come as Sporting Goods Hou ewe es Watcher T pewriters Tools, Circle & e.c. Discounts to 50%, Buy-Rite, Box 253, Hawthorne I, New Jersey

ELECTRIC Oulture, ampiders, wholesale Free Catalog Carvin PSW Covina, California

SAVINGS! Next Four Lautes Wholesale Categor \$1.00 Refundable. Russell Morris, 1501 Root N.E., Canton, Ohio.

SE POPULAR SCIENCE SEPTEMBER 1959

OPERATE Profitable Mail Order Business United Wholesalers, 1265-PS Broadway, New York 1, N Y

30 FORMULAS, PLANS, ETC.

PORMULAS-A'l kinda Latest products. Livera ure free Memico, Park Ridge in Hi

LATE Modern Manufacturing Formulas List Free Chemical Service Martville, New Yo. k

PREZ Largest formula estaing Big Surprise Weste n Chemica, Baiem, Oregon.

SPECIAL Formulas for latest moneymaking discoveries New! Good! Profitable! Valuable Literature Pree! Miller. Chemist, 1517-N, Tampa, Plorida

MANUPACTURING Permulas Nevert products for home car Lara are Free W. te Chemist, Box 237-C, Ozeville, Ohio.

PLASTICS

LEARN Plastics Pabrication For spare time in one Low cost home training is we available. Write for free book et la evature Train g Service Dept D 2. Porttand 12 Ures in

LAM, NAI Me Supplies Prior Lu Pice Bos maun. 46 Cornel : Bos on D. Mare

NEW Liquid casting plastic clear colors Embed rea, Suiters, bu terff or photor class Send Lie for two handles as How to Cast Liquid Plastics and it was to Make Tatra Musey at Home Castoare Dept K 102 Woodstorn misson

PLEXIOLAS — Any thickness — Clear —Culors C.A. in \$ 10 Clear Rudo— T. b. ing M. Clear in Planting, P.O. Box 1668. Hanner Pennsylvania.

SEND For Complete Catalog Prote The Plastica Center Of The World Kaufman Gaza Company, Plastics Division PS, Wilstington 96, Driaware

NOW-Electric Plastic Laminating K.t. Profit. Pleasure. Burr. 336 East Centre. Kalamazoo, Mich.

PLEXIOLAS % at 25, % at 75 square foot. Also other Plastics. Catalog the Plastic Shop, 2025 Nevada, Butto, Mon-ta's a

NEW Liquid casting phasis clear courses Embed see fitness but end ex photos course field for for two ha obside Him to Cast Liquid Plant is and It is to Make Katra Mirror at Home Casturity Dept J 61 Windstok I amas

EVERYTHING In Plastics - Catalog \$1.00 cie. Box 26. Union New Jetter)

YOUR Social Security Card Senied In Planic 25c Ray Putt 1848 Date Street Phila 24 Pa

CELLCIOID scrap sheets colors sires

() NOTENER & CHEMISTRY

CREMICAL And Physical Properties Of The Fremen's 40PP Brooker Tabuster 102 Elements A, habeters 1 \$ 90 C lumbia Associates Box 191 Hudson R Y

CATALOG With 3000 Blustrations \$2.00 Laboratory Materials, 7319 Vincentum. Ch. 1840

Hart STRATED Cuture Community mineralogy, biology 25c Tracey Laboratories, Evanston, Illinois.

NEW ratalog, low priced themicals, apparatus, heologicals, increacopes Catalog 20, Wino Chemicals, 134P West 23rd Street, New York 1)

ROCKET Supplies and Chemicals Catalog and Plana 25c (Rejundable), Central Rocket Company, 395, Waupaca, Wis.

ROCKET chemicals, chemistry set refills. Apparatus, glassware Catalog 25c. Bin Chemical Products. 36-P Somerset, Belmont 78, Manuschusetts

BOOKLETS' Chemistry Physics, Astronomy Science Resalts Electricity' Radio Light Tables Mathematics 150 Each Franks, 3121 South Radioe Chicago 5

CHEMICALS and appearatus for industria and tical and private laborator ex-Catalog 25c Dept M 26 Blolog ca. Supply Co. 1116 Mt. Hope Ave. Rothester 20 N Y

EXPERIMENTERS —Terrific Bargains Oniore Catalog 25c Expense Laboratories, Maintower Wisconsin UNUSUAL Chemistry books, courses, kital Bare chemicals, chempi Catalog free National Box 506, Redwood City Canf

CHEMISTRY—Science—Rockets Liters - ture Pres. "Lankton." Box 5262, Lansing, Mich.

ROCKET Supplies for amateur rocketry Cavalog 25c Mervin Hill Company Boits, Peting

AMAZING New Book Of Science Experimer & formular a d Calangue of Labotator; Supplies Only Jic National Scieroide Co., Dept. PS-8, 11 S. Park Avenue Lombard, Illinois.

G HELP WANTED REPORTS

COPYRIGITIED Reports Best paying committee trave advenue promot the form upon the form of a pring a beats, tabletes even factor and the state of the form of a pring a beats, the state of the state of

AMERICAN Ove seas John High Pay Men. Women, Transportation Paid Pree Information Transported Dept 12C, 200 West 14th St. New York 1

PORRION John- Latin America, Alaska Carmia up to 8 100 mm this Op to date 1919 For all Service Di ectors gives unique e maint bot est of fine he i gifter Mentary and Civina Conserved se Aircia. Of Experters Importers Mentary year \$100. Cloba Iteporta, Bux Mentary 1 Los Angeles 6, California.

PREE Information ~ USA Overseas Jobs High Pa Transports ion Pulsares Dept P 315 West 34th Surget, New York Chy 1

Jons on Strainsh pa Yachta traveling foreign countries. Davenport a 1354-J OPO, New York I, New York

BODATING Latin America Prosperous Braz vecerus a Otto hours I um the States New data regarding jobs opportion in the Constitution of the Constitut

JAPAN For East! All types of ht-paying jobs available, Latest, complete detailed reports \$2.00. Walts. Box \$03. C.P.O. Tokyo

JOBS Overseas! Write Jamecek Development Co. .08 Hub Station, New York 55 N Y

JOHN Slips \$100 Weekly Seminors
Time Adverture Demis Free Seminors
Service Ben 17 P Brooklyn S N Y

LATEST Foreign jobs. Unlimited opportunities. All Trades. Certified by American lead or job Researcher Pois newest South America. A aska. Cabada. Ve erelation of the searcher Box 40.1 Paramere 20. Maryland

MEN-carn \$60.00 weekly at home No verbal selling. Tested-proven. Box \$057, Fort Worth, Texas

AGENTS WANTED

YOUR own business—Suits \$, 50, Overroats 65r Mackinaws 35: Short 12 c La es Coats 30r Dresses 15c Enerthous prof a Calaing Free Nathan Porting Astal ates 2 09 J Roosevelt Road Chicago 8

ACENTS -300', profit selling genuine gold window sellers stores and off ex Fire sam, to Me a it Sign Letter Co. 12:7-E West Newport Chargo

GOLD of Silver letters numbers Windows, Doors Trucks 1" to 6" 500 - Profits—Free Samples Atlas-U 544 West 78th Chicago 30

EVERY Man A Prospect Request Free Sales Elt showing line of belt burkies, the clasps money rips cull onks, capels, individualised with customers have and emblems also cap badges for trucking bus, tax police, freemen Choice 3,000 emblems Hook Past Box 1435-P6, Providence, Rhode Island.

EARN big commission full or part time. Build profitable business of your own self-ing America's largest line low priced business principally the page tetalog samples habored of terms used daily by business profice. Adverso, principality line features principally has seen for the Casenda a rest of the for the Casenda a rest of \$5 for the Casenda and \$5 for th

BIG Profits — Stamp Social Security Plates Key Protectors, Sample—50c Catalog Free, General Products, 188-PB State, Albany 10, M. Y

START Your Own Business On Cred to I S and Canada Year win box 1444 Decrease and \$5,000 to \$41,500 to 1858 We happy at a known profitable business be ned to more profitable business be ned to more wide industry. Write Rawleigh's, Dept. 1-5 Pac. Frequent Labour.

MEXICAN art model Free Sample! Send 16c namps Manual, Sylvial, Apartado 9036, Mexico City

CHRISTMAS Cards—with customer's name imprinted. Bruad-appeal personal designs and his to time but less designs an one attract so present a non a b m that actually so a for a a There do no cards pay do not commissions. Farn \$400 to \$500 to

MAKE Muney selling sensational Dwarf Trees—bear Claut-Size Apples Praches Pears. Ornamental. Asso Stark-Burbank Standard Trees. Hoses. Shrubs. Vines e r Outst Pres. Stark, Dept 20199. Envisions. Missouri

RANTEST on to \$100 You I, Ever Make? Ever use new Monthson Bennis Course to at Cardo \$1 Cerami. Collin sea base y "to Pres John Arm versars previous and Admireta y Bennishan on Application from an Admireta y Pres a fe offer. We be the Othern 458 M. Hollywood, Dept. P. 30. Methodas.

ANYOME Can Sell fam as Moover tillforma for beauty show wastresses nurses, dectors extress All popular miracle fallries as so do rou. Exclusive styles, top quality Big cash thomas is a real to re-Equipment free Hoover Liept L. o. Naw York 11, N. Y

EUN a spare time Greeting Card and Carl Stop at Lome three free of each access of our new that first manage and A. the seaton Greeting Cards a G. I. Take their neutral and each to 100 profit No expected and each to 100 profit No expected and the seaton of the Heyal Greetings, Legal 122 Frendale, Malagan

TREMENDOUS profits! Every man, woman and child a customer Suits \$1.50 Pants 35c, Dresses 20c, Shoes 20c, Operate from store, home, mr Pree tatalog Superior, 1250-B Jefferson, Chicago 7

WRW Bathroom December Hangs on wall. Sunishes odors bathroom, kitchen Lightening seller Samplus sent on trial. Kristee, 43 Akron. Ohio.

AMAZING Christman Card Profits— Make 75c, not 50c, on fast-selling \$1.25 assortment; \$75.00 on 100. Oift bonuses 280 finest assortments, novelties, \$1.00 up 50 Personalized samples Free, assortments on approval. Free Gift Offer Creative, 4401 Cermak, Dept. 506-L, Chicago 22

QUICKEST Money with new Christmas Cards. Show Free Sample exclusive 21-card \$1.25 assortment, make 75c on each. \$45.00 on only 60. Over 400 assortments of fig. \$1 up Leading \$1 box on approval Personal Album free, Cardinal, \$480 State, Dept. 52-K Cincinnati 14

MAKE \$1,000 Before Christmas! Over the best-selling items! Gifts for men women, chadren, the home Distinctive greeting sards, stationery, jeweiry cosmetics, mechanical gadgets, novelies household helps, toys, games at prices to fit every pockethook for minimum order namples on approval. Make up to \$2., prin! Write today for free deta a Greet loss Unlimited, \$-363 Park Square, \$4. Paul I, Minn.

NEW Car Thief Signal Lightning Seller Samples sent on trial Northwest Electric 226 M tchell. South Debots

MAKE Extra Money Past! Show Excidgive Sunshine Business Christmas Cs of
Ashum to husinessmen. Make \$ 90 est a
produced for a neekle of wing beau
if Adem lea uning satisf of desarte
frences se et a s a Explicit quality at
fast se ling monument proce Can note
puriture Uni Approal Equations Art Sta
dies Inc. 100 Warmack Spring arid Mass.

NATIONA'SY Advertised I obsenhable Places His couper Contains a Season ten Tables are a Haywest Unit Cours to Lange Selection Language From Page Cours Page Academy Box & New York 46 N. Y.

STRIMENS of your own Karning potential as high as \$60,000 at a at I bound on \$12,000 have No heriga circle to bullet for tree explaint in bullet Harried & Company Box 8 100 Louisville In

Will the weer new auto and topocate we sout one or a coal and agree to show them to I make ap to the sout of the south and agree to show them to I make ap to the south a day even an appear I make a threshold transacting W 2 to been inc. 300 S. Throup St. Dept. X SM, Chicago 7, II.

MELL The Most Revolutionary Automotive Safety Device To Appear in Years, Write Ro-Vic Inc., Manchester Conn.

R to atras O O-Mate 1'7:C & Lat. Denser & Countedo

HARN \$12.000 Tearly-Only two same daily. World's Best Seller The H is B he of Districted at Provenient of Culture Market at P O Best 12 Ha word 6 Pa

PILLING Stations and mechanics buy our product because it earns them \$10.56 per hour Write. Curained Products, 218. Louisville it My

SELL Automatic Needle Threaders Patnilooms, Needles Vidmar's Sales, Presburg, Illinois

SCHOOL Seniors, Se Popular With Classimates Have Spending Money Calore Details Pres. Craftcards, 1996 235-M. Printegrals 16 Perior

DeGraw Brooklyn 31 New York

SELL reconditioned spark pluss. Free sample Lee Pluss, 1866-C Roberts, Houston J. Texas

14 RIGH-GHADE SALESMEN

MAKE Extra Money Big Cash Commissions plus premiums for your and your customers. Self Advertising Back Marries of the season at hear Terorama Counters to a H to hear down other Advers Quik duity halts buy repeat business Face Maxier Elt makes selling cash—no experience hecessary Superior Match. Dept P-050, 7536 Greenwood, Chicago 19 Hillingia.

IF you re interested in making money in selling see the hundreds of exceptional opportunities in Salesman's Opportunity Magazine. Send name for you're selling solutely free Tell us what you're selling now Opportunity 548 N Dearburn, Dept. 18 Chicago 10, Illinois

MAKE Extra Money selling advertising matchbooks, Pree catalog and sales outfit. Matchcorp. Dept. PS-99. Chicago 32

TOUR free copy of World's biggest sales magazine tells you how and where to hake now money on the tell is not write Specially Salesman Magazine. Deak 65. 307 Borth Michigan, Chicago 1

Will, You test new items in your home? Surprisingly big pay Latest conveniences for home, car Send no money Just your name. Kristee, 36, Akron. Ohio

FREE—Successful, "No Sealing" plan for earning \$5.00 to \$10.00 hour as our service distributor your area. Keep or a service of a in Rel ong peace series to be again to the Market Mig. Company. Trilby Florida

OET New Shirt Outdt Pree make 800 00 weekly on 5 everage orders a day Famous of any Made To Arasure dress and sport shirts at \$3.25 up. sell fast to all men. No experience needed Pull or part time. Write: Packard Shirt Co., Dept. \$12, Terre Haule, Ind.

AMAZINO invention slope slamming, batter in more But profits case with power set principle of the Court for all type desired to demonst atom setts it Kant-Stam, Dept. M. 12. Broombest, field.

BIO money Advertising Specialty Salesmen Exceptional Opportunity Elingstedts, Canton, Ohio

BUSINESS Eit Pres! Posteard puts von in business Com, lete fire 230 shor at les. A on a kets! New discoveries pay B g C armissions. Bu intestment Sand for F or E! Mason Chippens Palls E-184. Business.

IT Ain't Sellin —Just servicing! Stores make money for the sie y open hour tremerous a successful! Free Book to is at Witte Note. 1831 Lincoln, Dept O 31, Change 13

SPECIALTY Men Balesmen — Build permane it income 250 to \$125 a day year could be a descriped of fers approved for all in translates in the former all ridge cital risa ta halo in the for delais. Exture 1210 Chemer to Home Bigger commissions. Familiary Proving Bigger commissions. Familiary Catalogues furnished Poster, 1820 Ardmore, Chicago

ADVERTISMO Salesmen New sur any items Cenails free Johnny Publishers, Box 423. Connersville, Indiana.

B EDUCATION 41 & INSTRUCTION

LEARN While Assemble with your recorder, plantamentage or amazing new Electronia Electronia Electronia Electronia Electronia Electronia Line Research Association, Mos. 26 NM, Clampia Washington

BOOKKEEPERS! Increase your earnings! Operate your own simplified "Dolter A-Week" Bookkerping and Tax Service Full of spare time. Details Free. No obligation. Elia, Box 201. Codar Orova, North Carolina

MASTER Watchinsking at home. Pressent is teaser C' age School 2/28-WY Miles her Chicago 47

HOW To Train Borses"—A book everyone who I kee herses thould have bree No ob ga ton 5 mah address Beery School of Harrestanahap Dept. 109. Pleasant Hill. Other

HYOM School Diploma at home Licet sed ten ers. As oved Staterish. Not hern States Academy Station E 12, A at a Ca

Fried the pilited and Art Degrees earned through home stat Electro on Electrical Mechanical Call Physics Bus resulting specify moved desired Falls States and I have been private that the control Colore of A to de Sciences private to the colored particle and a colored private and a colored private states as a colored private to the colored private states as a colored private state as a colored pri

UNED Correspondence Courses and Books sold and rented. Money back guarantes. Catalog free (Courses Bought) Lee Mountain Piegah, Alabama

NE a Real Estate Broker, Study at Mome. Write for Free book today Gf approved Weaver School of Real Estate, 2018R Grand. Kansas City, Mo.

STUDY For Dector's Degree of Parchalose Mr aphysics and Divinity Corresponds a course only. College of Divine Mr aphysics. Dept. P.S. 2811 North Illinois. Indianapolis 5. Ind.

COMPLETE Y : Mich Sch et at heene in sus. e me w 2 42 ear old actual. The water heed Michaels Duema Internation bear et free Amer at School, De 2466 Dresel at 56th Chicago 37.

WANT a Devel Joh? Hatter part Adtal ement? We call be n you qua fer Com see Dome To the and Heavy F I meri and Cumm on Devel R a ne h pure find home- in the settlem and a ace We found I could Treating Service Dept B I Portialed J One

PREE I Q Test and information. Know your shifting. Capitalize on your own superior talents. Write Associated Institute, Box 4. Manhattan Beach 2, California.

BIG Money Operate own Fix-it Shoo. service household appeares motors mowers, saws, skates, etc. Free Book Christy Trades School, 4-8791, 2214 Lawrence. Chicago 25.

PROPITABLE weiding training available Hobart Trade Schoo, Box P-992.
Troy Ohio, OI approved Pinest equipment in U.S.A. Reasonable prices. Request CATALOR.

LEARN Custom Boat Building with proven aimplified methods instruction book and rataiog of 66 designs you can build for profitable resale, \$1.00 Creveland Boat Co. Box 1851, Cleveland, Ohio.

PINISH High School at home spare time. No classes. Diploma awarded. Write for Pree catalog. Wayne School, Catalog. HBA-15, 2527 Sheffield Chicago 14

BECOME Tax Consultant. Graduates earn \$1.000-43.000 every the season pre-paring returns evenings. State approved. Union Institute, Lakewood 1C N J

HELP yourself to abundant hains Our courses have aided students to at her fuller lives. Learn secret of contentment happiness Each degrees PaD MsD Write for free book. College of Universal Truth (Correspondence School), 23 K E. Jackson, Chicago.

SELL Real Estate! Manuscript 50c Endaiey's, 46 M. Whittier Indianapolis 19. Indanna.

PREE General Catalog 100 Pages Text, vocational, educational, instructional aubjects Militons of Volumes, new and used Bargain Prices. Books bought. Est 1902 Lette a College Book Co., Dept. PS. Columbur L. Ohio

BTUDY to be a dector of parchalogy firmal hysics or divides Correspondence of Charles of V Neothernan Priorson Deak 7 Pi kwick Bide Kansas City 6 Mp.

GO For Civil Service. On after a U.S. Civi Service job by planned preparation for the entrar a teste through Frank a Italitate a private home a new con ses This privatel owned organization offers courses for Postal Ciercal and of er finds Clet information on the Cir | Servfee appointment as a em physical restdence and offer requirements referans rights agartes vacations pet rement preparation dered et Free Bookiet No obliga son Frankin Institute Dept & 13. Rochester 4. N

DIESEL Learn to operate maintain and overhauf all type engines source time Write for Pres Book. Unit on Diesel Train na Dept. DM-61, 2521 Shemeld Chicago 14

HOW To Write Business Letters That really sail. Send 25c. Avalog, 322 W Van-Buren Chicago 7, Ilianute

USED_Correspondence Courses Educational Books. Satisfaction Guaranteed. Catalog for Refundable (Courses Bought) Baylos, 78-D Courtright, Wilkes-Barre, Pa.

OPERATE Restaurant Or Diner Free Booklet reveals plan Write School of Res-Madeson Chicago (Hilnois

SELL Blide Rules to college students' Rollman, 462-B, Passaic, New Jersey

LEARN Civil and crim bal prestant ob at hume Earn stead good pay Institute App ted Science 920 Sannyaide Dept 336, Chicago 40, Illinois.

DRAFTING-Design, Electronic Me-chanical Architectural Structural Estimaking Surveying Mathematics 6-Months prepares portion Engineering Arch tectural-Electronic Industries. Veterab approved State Licensed, Start Mondays, Mondell Institute, 230 West 41st. New York, 50 years Placing Thomsands Drufting-Design-Engineer Positions.

PHYSICAL Therapy and Mussage Home Training Pract, e privately or work with doctors and hospitals Pree Catalogue National Institute Box 4 159 E Ontario. Chicago, Himou.

EARN Degree, Pree builetin Homestudy M dwestern B bie Bchook, 1960 Brundrippie. Indianapous

PINISH High School or Grade School at home. Books furnished. Diproma awa ded Start where you left school Write Co um-bin School, 1434 Veterans Blvd Tucson APIZODA

ENGINEERING. Mathematics. Science Earn your diploma as home Better your postion imprise your en miles Free of-erature. Engineering that tale of America. Dept PS-6. P O Box 1816 Washington D C

CALCULUS Powerly) Space-Are Marh. ematics Fas Pra tital Lessons First Pour \$1 Mathro, 4256 40 Minmor Cincinnat. 17 Ohio.

EARN Willie You Learn Auto and Diesel Mechanics. Master this top passing trade Many gradua es carn \$100 a neck and up Approved for Korean veterans For free information write Dept 252 Nach-villa Auto-Diesel College, Rashvilla 3,

INEXPENSIVE Correspondence Courses -Divinity Theology Philosophy, Earn. Degree, Colleges U.S.A. abroad, Aureah, Central Valley, New York.

VOICE! Secretal Information! Free Studio, 14356MM South Jersey, Norwalk Cal. formas.

ABSOLUTE Christ Science, unmarking lam. Noncontradictory instruction \$1.00 refundable. Smith, Box 26, Buena Fark,

LEARN Real Estate Bus peus Past Un-lim ted appartun es Economical home-study course Particulars Pres. Gord in-Howard Institute, 322 Glover Building Kansas City J. Missouri

ELECTRO-Mechanical Engineering - Correspondence. Midwest Engineering School 10923 H grest Hickman Mita Masourt

KARN college degree through correspondence Gooden Binte University 2100BI Maryo a Burbank, California

LEARN-Teach Physical Training -physical therapy—massage Literature Standard Publications St. Charles 5, Illi-

CONTENTS

Will contest money Oeneral Contest Bu lette a ves hun-reds of tips Lasts outrent contesta ru en Sample magazine 25c Ornetal Contests 1808-A East 5th, Du-buth 12, M mesots

DETECTIVES

46

DETECTIVES—Work home—Travel Ex-perience universitary Detective Particu-lars free W to Wagoner, P-125 West 36th New York 24

DETECTIVE Training Phylips Secret Service System 1913-C North Kenneth. Phillips Secret Chicago 39 Lil

DETECTIVE Profession Brane Study Los Angeles 41 California

LANGUAGE OUTFITS.

LEARN world interlanguage endorsed by Unesco Free wason. Esperanto Now Mid-dicton. Wisconsin

ESPERANTO For Americans comprehensive lextbook \$3.95 Esperanto l'esta-tute. Box 1285, M.Iwaukee I. W.Sconley

BUSINESS SERVICE INFORMATION, NAME LISTS

IMPORT for fun or Profit Shop World-Wide from home, "Import-Direct" Trade Paper full of products for mail order real saws etc Pubushed B Morton Yearly Subscription \$3.00. Lepden Enterprises Box 7505, Jacksonville I. Florida

LAWYER Manuel Borja Vargas Box 1305, Tijuaha, Mexico

SPECIAL SERVICES

DISCARD your glasses and see better Revolutionary sciencific method how help-ing thousands might be greatest gift of your lifetime Det remarkable book and No further expenses Better Sight Con-24 Serverbirch Ave., Toronto 8, Status ...

ATTHORS SERVICE

WANT Your Book Published? Learn how we publish, advertise, promote, distribute Many surcesses Free bookiet PB Vanuage 120 West 11, New York

PRES Writers Catalogue giving manu-Mrad 8.5 B. ondway New York 10.

ADVERTISING AGENCIES, ETC., FOR ADVERTISERS

PREE expert assistance for manorder advertisers Statebook leading pewsympers magazines. 10c Chicago Advertising Agrico Chicago 6.

PREE Lasts Rates Leading Magazines, Nessiapera Lesters experi weit en Adservice 516-B Cu nella, Chicago 13

ADVERTISE 34 words 100 Caradian Newspapers, 45 50. Lists Free. Advertising Bureau, 10511-P Springfield, Chicago 41

UNRTOONING, MIGN PAINTING, CRALK TALKS

COURSE in high-paying commercial art. 55. Donald Hartung, Bux 43. Easton, Pa

HOW To Make Money With Simple Cartoons"-A book everyone who likes to draw about have. It is from no obligation Samply address, Cartoonias E.

TIPEWRITERS & OFFICE MACHINES.

1 B M. Electric Typowriters 648 95 New Purtables 639 95. 3 color Duplicator 609 96 Continental Distributors, Box 71, Temple Ci v Cautornia

RUBBER STAMPS & OFFICE SUPPLIES

INDEXED Customed, 3 lines \$1 00 4 pr h hace \$, 50 (Stript Print or Old Eng-dah Pres Stock & Advertis ; 8 am in Circulars, Type Chart 1 Day Service Youngers Stamp Shop, Princeton, lows

THREE Lines \$, 00 Free slock stamp Marwell 109 Byronout Transact

THREE line, self-inking pocket rubber stamp plantic case \$1 metar case \$1.60 L. We son P. O. Box 162, St. Charles.

PREE-Rubber Stamp Catalog Martine. 1425 Major Drive, Jefferson City, Missouri

THREE Lines, Pocket case 35c Neison 7400 Spracewood Des Pinnes Inhhois

THREE line stamp \$1.00 R N. Sipus.

Times the Pocket Case with pad of other t pe \$, 00 W B Atherton, Buz 61 Raude pl. Massachuse ta

PRINTING. MULTIGRAPHING, ETC.

FREE Catalog, Postpaid printing, Rubber stemps, D M Press, Sebastopol, Canif

OFFSET Printing 24 Hour Service— 86 75 -1000 8',x1. 3 8 50 - 5000 Nations, Letter 300 West 63rd St., New York City 16

COLORED Or White 814x11 1 000-\$5 50; 6.000-\$7 00. Fast! Also artwork varityping, layout Promo 385-P9 Broadway, New York City 13 layout Promotion

PREE Business Printing Catalog, Sam-ples, Howprint, 723-W Sunice, Webster tir over 19 Missour.

1000 NAME & Address Labels \$1 00 In plastic box. Youngers, Princeton, Iowa.

BUSINESS Ca da reasonable free samples R Fo d 15 John Ave Eamont N Y LETTERHEADS, C reulars, e.c. Price

lot Vala. a 1 05 South 2nd Ph a 10 Pa

1 000 BUSINESS Cards 'Raised Let-ters \$1 95 Samples Pioneer, PS-0 Island Park New York

100 6% ENVELOPES, 100 5% 218% Letterheads printed, \$2 00 Samples M Portney Box 167 RJ, Dillsburg 5, Pa

BUSINESS Cards 64 00 thousand 7 lines relied printing. Pocket rubber stamp I lines \$1.00 postpaid List free H P Rice, 106 East Fourth, Los Angeles 11, Cadifornia.

2 000 EMBOSSED Business Cards \$3 50 Postpard Samples Ellis, 5000 Highlandview Sylvania, Ohio

FAST Service! 100-412x11 letterheads \$2.00 Postpaid. R. Cook, (PS), \$15 West Gift Peoris. Himou

500 2 484 4 hne stickers \$1.00, red hirder \$1.50 Moreta Printer Saginaw Mich

100 Each \$ sll letterheads 614 envelopes carefully printed, \$2.00 Postpaid. Race Printing Hudson, New York.

QUALITY Printing, Business Cards, Mimeographing, Offset, Reasonable Samples, Schigke, H.-F., Alexandria, Kentucky

BUSINESS Cards With Giamout Reasomable Samples Mention Business Heaveier s. Colman, Pennsylvania.

PREE Catalog. Postpaid printing Rubber stamps. D M Press. Sebastopol, Calif

B PRINTING OUTFITS. SUPPLIES

PRINTING Outlite, type, supplies. Send dime for litustrated supply book and samples Keney Inc., H-3. Meriden, Conn.

RUBBER Stamp Present Hydraude Opra ed Electrical's Leaved Sizes S'XS' 8 27 10x15' start) & outfits, supplies. Printing Presses au . es. Custom Manufacturing, 507 N. Jefferson, Springfield 2. Missister.

PRINTING Presses. Type, Supplies 1 sts to Turnbaugh Ser is Mechanica-burg Pa

MAKE Your Own self more of rubber statings and otto roof cuts Prescrubber Argule 1 Wiscons a

ILLUSTRATED Silk Screen Printing Inatructions. \$1.00. Details Free Plonees Variety Stancius Box 162 E. Springheid I Mass.

RUBBER Samp Makers Spr es Kew et 2025 Barney Road Kasamatoo Mar san

TYPE cases, a spiles from manufacturer Catalog Kins M Ka Com v 23171 Telegraph Road Detroit 4: 3s-ch-

56 PATENT ATTORNEYS

INVENTION Record form free and "Patent information Every Inventor Should Have" Carl Miller. Registered Patent Attorney, Woolworth Building, New York.

INVENTORS Without obtration write for information explaining the steps you should take to accure a Patent. John Randolph Registered Patent A tortier 507 Victor Bide Washington 1 D C

INVENTORS' Patent Information will be sent on request, C. A. Snow & Company Registered Patent Attorneys, 5 427 Snow Building, Washington I, D. C.

invention. Unless the inventor is familiar invention. Unless the inventor is familiar with patent matiers he thou declarate a competent registered patent at our of agent to represent him We are registered to practice before he U.S. Patent O'll e and prejared to serve you in handling your paint matters. Patent Guide for the liverant containing detailed information concerning patent protection and procedure with Record of Invention form will be forwarded to you use request—without obliga on Charene A.O. Brien & Harvey Jacobson Registered Patent Attorne a \$28 O District National Building, Washington D. C.

INVENTORS — Take these presiminary steps toward patent protection. Sketch and describe your invention. Sign, date and have this disclosure witnessed by two people who understand your invention Have us make a preliminary search among US, patents already granted for almilar types of invention. We report on the probable patentability of your invention and recommend your further course of action. Write for our instructive booket. Patent Protection for lives are as a Contenent extent of Invention discussive form Victor J. Evans & Co. 541-E. Mersin Building, Washington 6, D. C.

"INVENTOR'S Guide" and "Record of Invention" free on request. Frank H Ledermann, 154 Nassau Street, New York City. INVENTORS—If you believe that you have an invention you should find out by to protect it. The firm of McMorrow Berman & Davidson in qualified to take the necessary steps for you. Send for copy of our Parent Bookiet. How to Protect Your Invention and Invention Record form No obligation. McMorrow Berman & Davidson. Registered Pa ent Attorne a 143 L. y. stor Burning Washington. 1. D. C.

III FOR INVENTORS

INVENTORS if you have an invention for sale, patented or unpatented, write institute of American Inventors. Dept. 20A. 435-P St., R W., Washington 4 D C

WE have the markets if you have the ideas. Harvey Engineering, Cambridge L. Maryland.

INVENTIONS wanted now by my Manufacturer Chents, Patented U patented Write Cinbert Adams, Patent Brider to B Wall Street, Pinancial District, New York City

INVENTORS Send for free Parent In to mat so back and Investor a Resord Region of Parent Attorney, Associate Evanuter Parent Office 1922-1929, Patent Attorney & Advisor Navy Department 1910-1947 Contave Miller 99-PSI Warner Building Washington 4, D. C.

INVENTORS With My obligation were for information explaining the steps you should take to secure a Patent on your invention. John Randolph, Registered Patent Actorney, 806 Victor Bidg., Washington I. D. C.

INVENTION Record form free and Pateri It a may to Every americal Should Have (a M et l'englered Pateri Attorney, Woolworth Building, New York

INVENTORS: Consider our offer first between ng or bleneing sour lovent on on a set of rose a basis Patented the active lover and on Demand. 78 Wall Street, New York B. N. T.

COLLEGE Trained brokers market your patented unpatented inventions. Write international Services. 3925-B Lorain. Claveland 13, Ohio

INVENTORS If you believe that you have an it we ton ou should find our how to protest it. The firm of McMingrow Berman & Davidson is quantied to take the necessary neps for you Send for copy of our Patent Sinklet. How to Protest Your Invest in and It vert on Re old form No ob, justice McMingrew Berman & Davidson, deg stered Patent Attorne a 143 K Vistor Building Wash naton 1 D C.

INVENTORS Learn how to protect your invention. Patent Outle containing detailed information concerning palent protection and procedure together with Record of Invention. Form a like forwarded upon request without obligation. We are recistered to practice before the U.S. Patent Office and prepared to serve you in handing your patent matters. Clarence A O.B. ieb & Harrey Jacobson Registered Palent Attorneys. \$7A-G. District Metional Building Washington D. C.

MODELS took dies product manufactu ig Raydie 248-O Interstate Addison.

INVENTORS—Save High Fees Apply for your Patent yourself, New Do It-Yourself Patent Kit now makes it esty Free Registration Form Miss Curre Arden. 60 Wm Peno Annex Philadelphia 5. Penna

INVENTORS—This firm is registered to practice before the United States Patent Office and available to assist you in the preparation and prosecution of jour patent apparation. Patent Protection for Josephary builded containing desired in formation and steeps to take toward patent protect in sent promoter upon request. No object in Sent promoter upon request.

PATENTS or Money for your Ideas Buyers waiting You must have Jack Pot Pay Off List save double Protection Information \$2.00 A B Research, 1940 Williams, Chicago 40, III.

INVENTOR'S Quide" sent free Frank B Ledermonn 154 Kaman Street, New York 38, M. T HIGHEST Cash, Royaltes. Inventors Having Good Ideas Write Inventors Creative Service 154 South Spring, Los Anneles 11 Calif.

PATENT Searches \$6.00 44-hour service Prec Invention Protession forms Write Raymond L. Smith, Patent Searcher, 620 Sheraton Building, Washington 5. D. C

PATENT Searches \$6.00 46 hour sirman service invention Protect on forms free. Write Petent Engineering Service 712 14th Street N W . Washington 5. D C

PHOTECTION without patents or copyrights. Tekservice, 282 Woodel, & Station, North Bergen, N. J.

PATENT Searches including copies of nearest patents, \$6.00. Reports airmailed a hin 44 hours. More than 100 registered patent a torne a use my service for Free lovention protection forms. Write Mass Ann Hastings. P. O. Box 174, Washington 4, D. C.

61 INVENTIONS WANTED

INVENTORS Hundreds of manufacturers have required our amistance in locating marketable new produces Congress information free Institute of Ame an inventors, Dept. 30C. 835 F Street N. W., Wassington 4. D. C.

INVENTIONS wanted Patented, unpatented Tremendous Manufacturers lists Global Marketing Service, 2429 77th, Oakland 5. Calif

ARE you interested in offers from reliable has als there for our favor that Patented unputented Harvey Enginee ing Cambridge, Maryland.

INVENTORS-Oct The Best Offer First! Patented or unpatented Write Carl Sommer, Director, Industrial Invention Sales, 2116 B Sylvaria Ave., Toledo 13, Obio

INVENTIONS wasted how by m. Marufactorer Coents. Patented. Unpa exted. W. r. C. bert Adams. Pa ent Br. ker. 80 R. Wall Street, Financial District. New York.

INVENTORS' Consider our offer first before second or breits if your favent on the cash or rotally basis Patented Unpatented Invest ma on Demand 19 Wall Street, New York 5. N. Y.

INVENTORS—Do you want to sell or license your invention on each or royalty basis? Write Kessler Corporation, 78-1W. Fremont Ohio

INVENTIONS Wanted Patented — Patent Penting 26 Years experience Primoring Inventions National Service Buseau 2122 Meramec. St. Louis 18, Missouri.

INVENTIONS Wanted for Manufacturers. Pres Details Write-Allen, Dept. D., 712 Davis Bidg., Dallas S. Texas

INVENTORS Contact Ten Patent Or Sales Offices . . \$1 00. Box 481, Coplay, Pa

PREE Last Needed Inventions Protection Form. Inventors Sales & Engineering Suresu. Dept. 120-2, Box 4973, Washington 6, D C

CASH Buyers for inventions. Write National Inventors Institute, Box 4125, Washington 15 D C

MANUFACTURING

MANUPACTURER Fishing Lares, Plaslic, hone better 30 Models, Pennies Free circular Quaker, 2514-24 M. Lawrence, Phila, 40, Pa.

64 MODELS, MODEL SUPPLIES

SHIP Models Most complete line in New England Kits 2tt has plans books tools cryings motors insufrated ratalog 35r James Bhus and Co. Inc. Dept. PS 142 Attantic Avenue Boston 10, Massachusetts

SHIP and yacht model fittings, blueprints, Send 35c for Lituatra ed catalog 229 listing bundreds of items A. J. Fisher 1902-2 Etowah Ave., Royal Oak, Michigan.

SCALE mode) materials for building mode, homes and architectural buildings of any tipe 'a' and 's' mass Send 25c for catalog A&B Model Builders Dept. S. 454 Donnyan Road, Kansas City, Kansas

"ST" Steam Engine Castings, Fittings Catalog Ibe Blup Models Ltd .66 Summer Andover, Mass

SRIP Model Kits And Fittings Chippers Schooners, Prigates, Briga Paque Mod-els, Plans, Catalog And Book Unt Die Model Shipways, Box 35, Bogota, New

FLYINO Model airplane balsa kata-Specializing in 920 motor sizes and many others For free information write Ralph Doornhoe. 4526 West 12th. Wichita, Karinaa.

POWER Models. Unusual Steam: Gavo line And Tea and Electer Fit as Met-nas Dasp accessed And Mechanical Lubris s patria Comprehensive 92 Page Catalog #1 00 Charles Cole Ventura Calif

"POWER Drives Handbrok M pages Pustrat og many types m sor dr ves for model nation has a displace furnishles etc. Ma. 23 cet a n.h. returnable first order \$3.00 or more. Wilson and Cleve and Dr A PB, 425 Lakeside N W Cleverand 13.

ROCKET Supplies, Notales, Coues, Tubes Specials Also Made, Catalog 10c. 8ky Mfg. Co., Mineral Point Pa. Course,

HOME CHAPTSMAS

PREE Leathercraft Catalog Quality Kits, Leathers, Tools Handicrafters, Dept. 8. Box 421, Montross, California

PREE "Do-It-Yourself" Leathercraft Cataing, Tandy Leather Company, Box 791 Nio Fort Worth, Texas.

LEARN Art Metalcraft and Jewelry making Complete, inexpendes, home training course now available. Special tools and materials here shed Write for free book-let. Interstate Training Service, Dept. L-2. Portland 12. Overan

PAINT Sprayer. I times faster than brushing Sensational offer? Pres Polder Imaco, 1828 S. State, Chicago 15, Ilanois.

WOODWORKING and Cabinetmaking course for beginning and advanced home craftemen. Only complete low-cost home training program available Write for free bakes Interstate Training Service, Dept G-2 Periland 12, Oreg 41

CHANDPATHER clock morements case Bar van Norman, 2 Court

NEW big flustrated catalog Surplies for Lenter rat. Me a ratt a d n one cun amail nempensive ciat a Prompt alique merts Top values Latest ideas Send lice today to 3 C Larson Co. Dept. 2036, 200 S Tripp Characo 24

LAROE illustrated Catalogue 25c Perco s. Box 248 Bradent in Facilita

PREE Pluorescent Bargain Catalog— Pixture kits. Pixtures, Circlines, Parts. Shoplite, 650S Franklin, Butley 10, New

BRONZE Boby Shots Inexpensively In structions \$1.00. Display Center, Sc. Lin-

PREZ! New supply entalog loaded with monermaking costume and shell Jewelry . Modern Craft, Box 1108s-PN. Saint Peteraburg 13. Florida.

99 JIO saw patterns. Beautiful shelves. 'Ornaments, Noveltics. Phis "How Where to Sell" \$1.00 Mastercraft, 104S, 7041 Mastercraft, 104S, 7941 Owers Chicago 11

KNOCKDOWN cedar chest and lumber, free price list. Bedford Lumber Company Shelbyville, Tennessee

KILN Dried Warral Cherry Ric Hards Writeds B with Boards A. 1 Squales Midland Lumber Cumpany PO Box 262, Sa vannah Mo

FREE! Leathercraft catalog. Hundreds of new items. Write MacPherson Bros. Leather Company, Dept. A 730 Misatou 81., San Prancisco 3, Calif

PREE. New Catalog 2436 artist-drawn patterns. Craftpians, 1322-B Wabash, Chicago 5.

DO IT TOURSELF

Do-It-Yourself" Leat hercraft Caraba Tandy Les her Company, Box. 73, X-7. Fort Worth Texas

OLD GOLD JEWELRY, WATCHES, ETC.

USED and new watches \$2 up. Free Last Southern Watches, & PS Sc. Wabash, Chicago 3

HIGHEST Cash For Old Gold, Jewelry, Gold Teeth, Watches, Diamonds, Streetware, Speciacles Platinum Mercury Free information. Rose Refiners, Heyworth Bldg., Chicago 2.

FREE rating Contume jewelry parts Bupp ion Reasonable inters Past per ce G aranteed quants Unique meirhand se Fonton s. Box 53, Mediord 55. Massachuseria

COSTUME Jewelry Supplies. Settings Rhimstone, etc. 18 page Hustrated catalog. 30c. Milady, Box 1129 G P O., New York City (1)

HIGHEST Cash Paid for Old Gold. Jewelry, Gold Teeth, Diamonds, Watches, Silver, Mail Articles Today Information Free Chicago Gold Refining Co., 6 E. Mouroe, Dept 1337 Chicago I

GOLD, Silver, Platinum-watches, spec-Bell. Bend Scrap for Best Price. Riectro Company 1042 Highland Ave., Buffalo 23.

SWISS watches from importer—\$2.95 up Caralog Transworld, \$63 5 Ave., , N T C

10 SW185 Watches \$18.00. Catalog 25c Berkowitz, 1130 Castiehill, New York City 12

PREE Information, Highest Cash Old Jeeth, Jeweiry Watches Hory Gold Teeth, Jeweiry Watches Bury's Rockey Research 40 SH Heathorne Paice Vendes Ritates Cal c o.4

FOR THE HOME

POAM subbet furnity e customs. Pac-tory seconds 50% discount. Pres catalog. Perms Poam, 386 A Nys Ave, Irvington, New Jeiser

HAVE Up To \$10.00 On Service Calls
Automatic Washer Service Guide He is
You Serve Most Service Publicus Pala
For Itself Many Times, \$1.00 To Ripplinger 1928 Gravois, St. Louis 4, Mo

OENUINE Mexican Rainbow Sarape. Large, for Den-Sed or Living Room A bargain-98 25. Hainline, Box 462, El Paso,

PRINT of George Washington U 8.'s finest engravers, \$5.00. R Motiey, Box 6301, Columbus, Ohlo

STORM windows to 30° wide low as 12 95 Srif storing jow as 12 25 Pull party stars \$1 00 J P Schreeder & Sous Box 536 Wheeling W ha

OF INTEREST TO WOMEN

MAKE \$25 to \$15 week a said to the will velopes Our in the tions reven now Gienway, Box 6561. Cleveland I. Ohio.

DRESSES 24c; Shoes 29c, Men's suits 44.95, trousers \$1.20. Better used of hing. Pree Catalog. Transworld. Rei-H Christopher Brooklyn 12, N. Y

INTERIOR Decoration Approved supervised home study training. Fine starting no k ht furrished Du ma aware i Law to on and he men seem for free booklet Chicago School of It, error Decoration. \$35 Diversey Pkwy Dept 1726 ment for free Charage 14

YOU Can start for Civil Service career through home study Attractive salaries, benefits Pree booklet. No obligation Private organization. Frankin Institute Dept S.5. Rochester 6 N Y

\$CASH, making Pibre Plowers, Free Discount Catalog, Plocraft 7, Fairell, Pa

CUT-Type Bew extra money in your spare time With topewriter sewing mamine or missors you can earn \$20 to \$20 a week at home. For details send 25c in toth to 5' lwater, Box \$27 Morris Plains 3. New Jersey.

\$200. MONTHLY Possible, Sewing Bubywear' No house sealing. Free it formation Bend name to Cut es. Watsaw 14. Ind a. a.

HOU-EWIVES-earn \$60 weekly at home. No seiting Dignified work. Opportunities P.O. Box \$057, Fort Worth, Trans.

11 POR SALE MISCELLANEOUS

SHOPPING Bag fishnet design plastic handles, \$ 00. Free Louis, IPA, Box. Box. A. Sat. a Berbara, Calif.

WANTED TO BUY

IMMEDIATE Cash For Used Plating Equipment Send Description Equipment Division 1634 East First. Los Angeles 23,

QUICKSILVER, platinum, silver, gold. Over absented Mer ary Termina, Noc-wood, Massachuse 4

TATTOOING BUPPLIER

LEARN problemble fascinating Tattooing I contrated in orms in \$1.00. Zets.

GEIGER COUNTERS & TREASURE FINDERS

TRANSISTOR Tressure Detectors, unde water defectors. Many modela ca alog timed her Electr. ca Co. De Free ca Co Dept 1 Jota Kast Ludian School, Phoenix Arizona

MONEY for you in buried treasurecutes and since can be found with to dok T a con prized Longium Five midthe it ad a fit ferwa er Locator praced from \$79.50. Free terature. Authorise from \$79.50 Free terature. Authorities books of kingers tempores are absented the second Company 1540 West Change to Bord Gottslate I Cantorina

GOLD-Silver Detectors, Geiger Counters Violites for tungsten, etc. Best available Charanteed Information Free Detection 5328 Vineland Ava., Dept. 42, North Hollyword Ca forbia

POPTABLE Ge per Chun er 50 Dr ars Shipped, Details Free, Copen, Natrdwood Lane Prestwood Bucks, England.

THEASURE! Map. Handbook 25c Loca-tors Howe 311 Kansas, Atchison, Kansas

GOLD Silver, metal locater Very sen-sitive Complete ready to operate with instructions \$10.00, Dectron, Box 363, Mepard Texas.

TREASURE Map of all 48 states 22 00 Map Cache. Box 287s, Burlingame, Call

METAL Locator Kits and Assembled Models from \$35.50. Transstatised and Underwater Modela Available Free Cataiog. Electronic Applications, Dept. S, Eox. S, Arlington 10. Virginas.

WATCH BEPAIRING

WATCH and clock repairing books. Pres North American, 2220-BK Milcatelog waukee Chicago 47, Illinois,

WATCHMAKERS Journal contains inat muctions in watch repairing MBLTADIE copy 15c Dean Co , Box 1214 S, Daytona Seach, Plotida.

MISCRAL ANEGUR

ELECTRONIC Steep Inducer Complete. ly harmless Free literature. Gardiner Electronics Co., Dept. 25, 2545 East Indian S need Process Artagra-

CIVIL Service. Learn about this field of work and how you can prepare yourself by home study for a high entrance mark. Privale organization. Free booklet. No obligation. Franklin Institute, Dept. 814. Rochester 4 N Y

ORNAMENTAL Iron designs for realings, columns, etc. Pres literature Cuntumpham. 3841 South 3200 West PS-31. Salt Lake City 4, Utah

RECEIVE Samples, plagazines, catalogs, 10c. Star House, B-7002. San Antonia 10.

237 PAGE Catalog \$2.00 Laboratory Materials, 7319 Vincennes, Chicago, Ellinois.

RECEIVE—Magazine Samples, Mails. Catalogues, Bargains From Everywhere. Get Listed 25c. Horick's. Cincinnati 26. Ohla

CESSPOOLS, septie tanks, all elogged drains cleaned, deodorised by new ensyme product, Saves annual pumping digging. etc. Harmiesa to plumbing, pets or people Simply flush through toilet. His months' supply only \$2.95. Ma led anywhere in U.S.A. Electric Sewer Cleaning Co., Adston 14. Mass

SIMPLIFIED, Improved - Algebra Mineographs Windmas Inventor Ziemba. I 6123 Orchard. Dearborn. Michigan.

I KNOW where you can obtain information on government contracts. Burplus Sales, etc. Bend \$1 00 to M & W Enterprinter, P. O. Box 654, Spratigfield Main

RECEIVE Money Making Opportunities Unusual Bargains, 25c. Carter's, 31 High, Esyria. Ohio.

RECHARGEABLE flashinghts \$3.95. Black -Forest clock kits \$3 95, Oaiser, 1105 W. Mulberry St., Kokomo, Indiana

MIRROR Front, Transparent Back, Observe, Photograph, Secretly, 4"x10", \$2 00 16"x20", \$5 00. One-Way Mirror, PS-858, Box \$25, Mt. Vernon, N T

DRESSES 150, Coata \$1 93, Shoes 390 (Used). Pros Cainlogue. Acc., 196-SP DeGraw, Brooklyn 31, New York

GERMANY Japan. Worldwide (Agen-cles)-Address Lists Complete \$1 Burke Worldwide (Agen-Associates, Manchester Mass.

MA WESTERN MERCHANDISE

WELLS-Pargo Reward Posters 12/22 Jess James 60c Frontier, Box 1674PS North Decatur, Os.

BWAP 78B

READ "Trading Post Magazine", Thorne's, 525 Dewey, Jackson 35, Michi-

PERSONAL

MEXICAN Legal Matters. A. Espejo, Box 294, Hermosido, Sonora, Mexico.

BORROW \$50 to \$600 By Mail. Quick Easy, Private. No Co-Signers, Repay to 24 amail monthly payments. Por the amount you want write today to Diat Pinance Co., etd E.spatrick Bidg., Dept. J-1, Omaha 2.

LOANS By Mail \$50 To \$600 For any purpose. Employed men and women eligi bite. Confidential, 2 years to repay. Write for free loan application. American Loan Plan City Nate na: Bidg , Dept. PS-5289. Omaha 2, Nebraska.

SORROW By Mail, \$100-3000, Anywhere. Air Mail Service. Postal Pinence. 200 Keeline Building, Dopt. 14R, Omaha 3. Nebraska.

"CLUB, How To Start" Sent Free To Young Single Men. Rave fun. Write World Hendquarters, Bachelors Protective Association 25-B Manor Drive, Newark 6, N J

ROYAL Jelly 50 mg capsules Month a supply \$5.06. 30 days \$14.05 100 days \$10.50 "Apr-Vitalex", PS-1, Box 6674, Dalus 10 Texas.

HELP prevent Murder! Read "Protec-on" magazine 25c. Pioneer 6376 Windsor tion" Lane San Jose Casterius

PHOENIX Arizona-Remails 25c Sun-day Classified \$1.00 Kenmar P O Box 1.054. Phoenix. Arizona

REAR Vision For Salesmen Teachers-New Optical Invention attaches to your glames. Send \$1.50. Robert R. Cole. 4129 Shannon Drive, Baltimore 13, Maryland.

"RULE Others with your Thoughla". Telepathy. (Details—stamp.) Ciarion, Box 9309-S6, Chicago 90

X-RAY Eyes." Adults. Entire Course. Satisfaction or refund. Clarion, Box 9309-Xd. Chicago 90.

CONFIDENTIAL remailing service 25c. monthly \$3 00. Hill's, Box 895-PS, Plant 1 Michigan

SECRET Mail Receiving-Forwarding System 14 Month Hedgpeth, Box 830 Alhambra 24. California

SUPER memory overnight? Success guaranteed! Bijou. Box 1727-V. Hollywood 28. Call!

MEXICAN Law Attorney Centeros.

HOMEBREWED Wines, Etc. " plete Book \$1 00. ABC Publications, Box 548. San Prancisco 1-DR. California.

SUCCESS-Minded? Want to be someody? Wake up your mind with my Thought and Behavior Control" Reading Plan, and be what you desire Many helped. Rush request for exciting free leclure. President. Box 1934-W, Louisville 1, Ky

REMAILING SERVICE HOA.

LETTERS Remailed - Received - For-warded Details from Bensley 1829-W Cla borne. Richmond 20. Va

PHILADELPHIA remails 25c Sunday classifieds 81 00. Townsends, 1018 Wood-iand Sharon Hill Pa

REMAILS 250, Historic Boston picture Lynn Rd. Brocking, Mass

REMAILS 25c Monthly \$3 00 Prompt rece ving-forwarding Lillian's, Box VC3011. No Halls wood, Caul.

MAIL received, forwarded, 35c letter at 20 Month Lloyd Momit, 2911 M Flagler, West Palm Beach, Florida





NORTH AMERICAN DISTI

DETAILED PLANS C .95 PHICES WITH

NOW YOU CAN OWN

BUILD and FLY ESSEX HELICOPTER

Dund-it Yourself Very Low Cost Design Glider or Motor Type copter Simple To Construct. Easy To Fy Also with Jet or Piston Engine Can A so Be Mounted on Bost or Volumetor No. on Boat or Motorscooter No. P. ots License Necessary Build and Fly in a Few Works! Order 1A Pusclage Plans Specs., Kit Prices Today

ESSEX AIRCRAFT CO., LTD. P.O. BOX 151 . DEPT. PS-9 WINDSOR, ONT., CANADA



it's easy, it's fure... Venetia Stevenson.

High fidelity STEREO sound can be yours at savings of 50% or more, HEATHKIT step-by-step instructions, written especially for beginners, assure swift and successful assembly Send today for the FREE catalog listing over 100 easy-tobuild HEATHKITS.



HEATH COMPANY

Benton Harbor 16, Michigan

a subsidiary of Daystrom, Inc.

Please send the latest Heathkit Catalog.

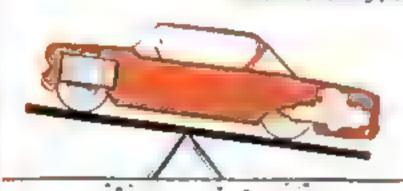
NAME			
ADDRESS			
CITY	ZONE	STATE	

By Ken Fermoyle PS Detroit Editor

Corvair Levels Off at 40/60

Rear-engine war rages. Pot-shots from Ford and Chrysler (whose compact cars will have engines up front) have drawn counterfire from GM. To quash any doubts about the practicality and handling of rear-engine cars, Chevrolet held a press conference for auto writers. Purpose to brief them on "various aspects" of rear-engine design—with particular reference to the almost-ready Corvair

Maurice Olley, retired director of Chevy research and de-



velopment, argued very convincingly for rear engines. Development of tires with adequate cornering power, and an increased supply of aluminum for lightweight engines, were keys to the successful engineering of a compact car, Olley reports. And of course the air-cooled engine eliminates water hoses, water pump and radiator. That helped lick

the weight problem, too.

Distribution of Corvair's 2,400-pound weight will be 40 percent on front wheels and 60 percent on rear. This will not vary significantly with different loads.

A tip for future owners: Pressure for Corvair's special tires (on 13-inch wheels) will be critical Recommended: 26 pounds in rear tires, 15-16 in front

As for engine accessibility, Olley says: "It's like the Volkswagen—when you open up the rear end, all the machinery is sitting there smiling at you."

Why Buick's drastic sales slump this year? Is it because Buick models switched in "image" too rapidly? Could be. Known for years as a relatively conservative automobile with particular appeal to doctors, businessmen and other solid, conservative buyers, Buick blossomed last fall with radically different, though attractive, styling. Did this alienate a lot of the old faithful, switching the appeal to a younger-in-heart market? And is it just a question of time

before this second market starts buying in large quantities?

A straw in the wind; Buick is having trouble building enough convertibles, sold more up to June (11,164) than in all '58 (5,764). Soft-tops are accounting for more than 11 percent of total sales.



You have a ther reached a page that is unavailable for viewing or reached your viewing imit for this book

DETROIT

First Studebaker convertible in nearly a decade will appear as part of the 1960 Lark line this fall. Lark shape and dimensions made quite a chore of styling and engineering a good design. Using a squared-off roof line and semi-blind rear quarter, a la Ford Galaxie, solved the problem.

Safety-belt scoffers, hear this! The National Safety Council reports that experts estimate 5,000 lives could be saved annually if seat belts were used in all cars. "Risk of death or serious injury in a wreck is five times greater if you are hurled from the car than if you stay inside—and seat belts help keep you there," reports Ralph Kuhli, director of the Council's Public Safety Department.

A cheaper way to raise gas-octane ratings has been revealed by Esso Research. The new process concentrates on light virgin naphthas, which have the lowest octane of any gasoline component. The method costs an estimated up to 50 percent less than conventional octane-raising.

Chrysler is spending \$15,000,000 to protect its 1960 unit-bodied cars against corrosion. This is a problem with any car but it's intensified by unitized construction—if corrosion eats away part of the metal, it weakens the entire vehicle.

After four years of lab work and field testing, Chrysler engineers have come up with a process they believe will provide two to three times greater corrosion resistance.

Completed steel bodies will ride conveyors, roller-coaster fashion, through a series of seven tanks containing cleaning, rinsing, phosphate-coating and water-reducible primer solu-

tions. These will cover the bodies up to about 18 inches from the bottom.

Upper bodies will be sprayed from overhead nozzles while the cars are moving through all but the primer-coating stage.

The up-and-down conveyors will rise after each dip tank to let the bodies drain 50 seconds. The setup is housed in a 2,300-foot tunnel and it takes each car about 1% hours to complete the rustproofing cycle.





Only Perfect Circle gives you

2-WAY POWER PROTECTION!

1. Perfect Circle Valve Seals

solve problem of excessive oil consumption past valves!

New rings and restored valve efficiency produce higher compression pressures—and higher deceleration vacuum. Increased vacuum draws oil through loose and worn valve guides. Stop this loss with new Perfect Circle Valve Seals!

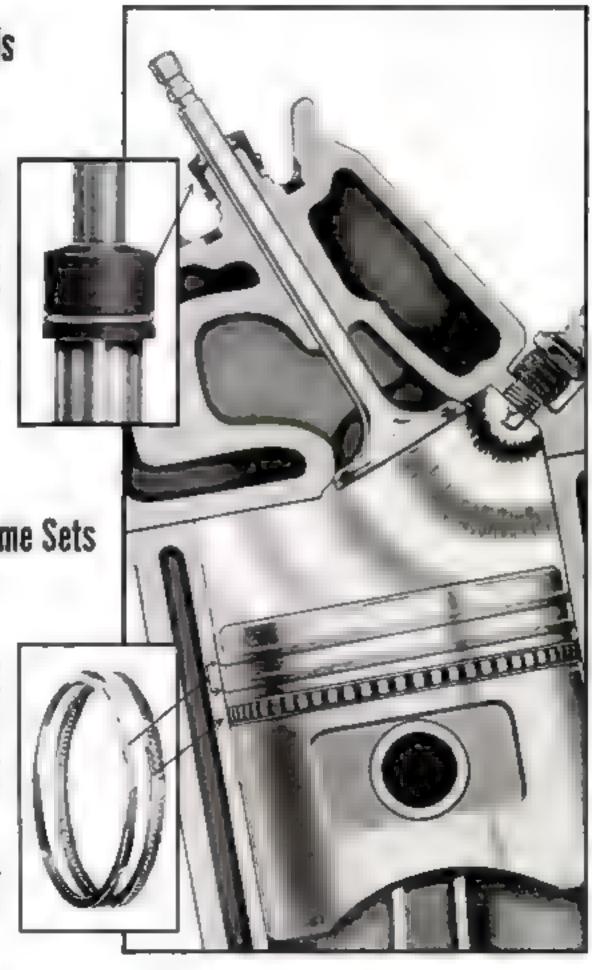
For best performance, valve or ring jobs should include installation of Perfect Circle Valve Seals. The cost is surprisingly low.

2. Perfect Circle 2-in-1 Chrome Sets

solve problem of excessive oil consumption past pistons!

2-in-1 Chrome sets provide the finest piston rings obtainable! Top rings and oil rings are plated with thick, solid chrome that doubles life of cylinders, rings, pistons. No tedious break-in is necessary, rings are pre-seated at factory.

For best performance install 2in-1 Chrome sets for thousands of extra miles of power protection and positive oil control!



PERFECT

PISTON RINGS

CIRCLE

POWER SERVICE PRODUCTS

In Canada: Don Mills, Ontaria

Get satisfying flavor...So friendly to your taste!

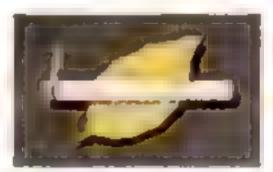
NO FLAT "FILTERED-OUT" FLAVOR!
NO DRY "SMOKED-OUT" TASTE!

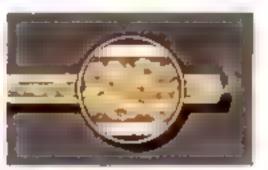


O 4.1 Co.

See how Pall Mall's famous length of fine tobacco travels and gentles the smoke —makes it mild—but does not filter out that satisfying flavor!







HERE'S WHY SMOKE "TRAVELED" THROUGH FINE TOBACCO TASTES BEST

You get Pall Mall's famous length of the finest tobaccos money can buy.

Pall Mail's famous length travels and genties the smoke naturally . . .

Travels it over, under, around and through Pall Mall's fine tobaccos!

Outstanding...and they are Mild!

Product of The American Foliages Company "Tobacco is our mille same"



Hidden movie cameras, closed-circuit TV, silent alarm systems—and snoopier guards are the newest weapons for

Stopping the Wave of Bank Holdups

Camera catches would-be robber

This blurred shot records an attempted robbery in a Linden, N. J., bank. The capped man had just handed a teller a note threatening to kill him unless he handed over all his fives, tens, and twenties. The teller tripped a movie camera instead. The man fied. Soon police were checking the film against their files, releasing copies for TV news shows.



By Joan Steen

BANK robbery—a chancy, immoral, though possibly exhilarating way to obtain money—is increasing spectacularly. There were 416 such robberies in the U. S. last year, 50 percent more than in 1957. So far this year the rate is even worse, running 25 percent higher. That means an average of 10 holdups a week, every week in 1959.

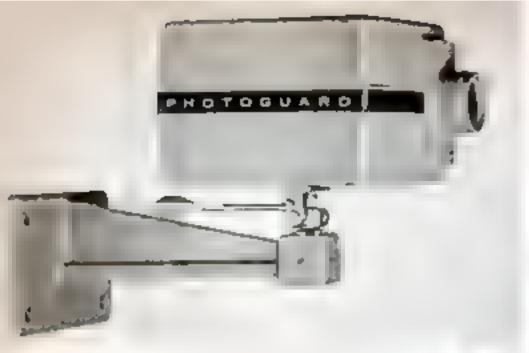
Are there new recruits to robbery? Are

the Dillinger days coming back? Are banks themselves too easy to knock off? Police say yes—to all three questions.

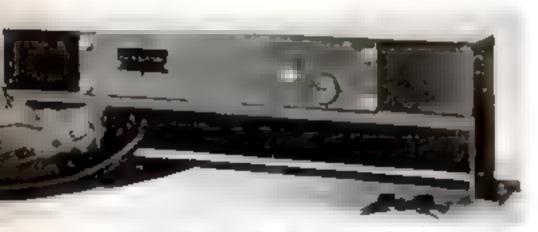
What's being done about it? FBI agents, bank security officers, police, and equipment manufacturers have been meeting for months. Some of their recommendations:

 Make banks look more like the impregnable fortresses of the old days.

 Make them tougher inside. Install better alarm systems, and new vault re-



MOSLER'S PHOTOGUARD CAMERA looks like this when it's not camonflaged and made part of a bank's decor. Besides being small and silent, it's bullet-, rust- and tamper-proof.



A TELLER CAN TRIP AN ALARM by lacking his toes up inside this foot rail, also made by Musler. The lock and a visual indicator are precautions against tampering or Jalse plaring



THAT COULD BE A MOVIE CAMERA up there near the bank's entrance. But maybe not, Sometimes a hank has a couple of such installations, one for the real thing and one for show.

locking devices. Equip more banks with new gear such as hidden cameras and closed-circuit TV.

 Educate employees. Train tellers to be cool and observant. Let bank guards be armed and snoopy, not just floorwalkers.

Give the new security systems plenty

of publicity.

The current bank crime wave didn't build up overnight. Police have learned to expect a crime increase after a major war. There are surplus weapons around and people who know how to use them. Add to that the recession; even a mild one boosts the crime rate. And surprisingly enough, it stays high after recovery. To these, add another factor, which some enforcement officials term a general laxity on the part of banks.

Conditions were ripe for a crime wave. In increasing numbers, lawbreakers tried their luck, and things started to snowball. Amateurs played a big part: According to the American Bankers Association, 70 percent of those 416 robberies last year were pulled off by persons with

no serious police record

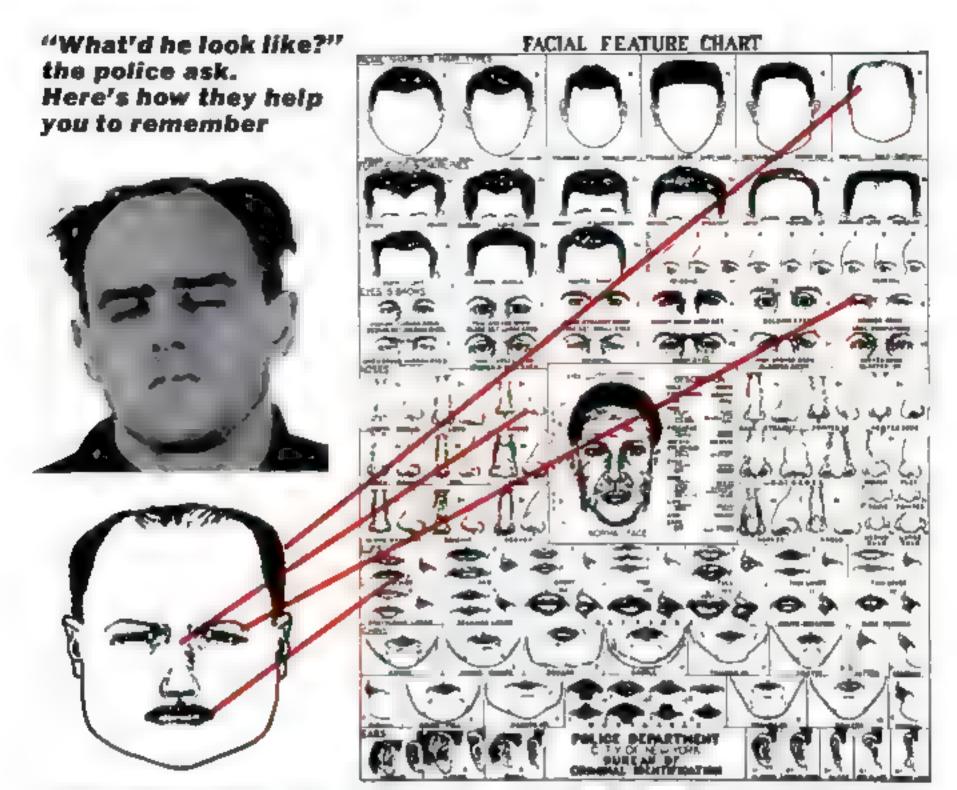
New techniques. The nonprofessionals tried new tricks. Often they worked alone. They chose busy banking hours and mingled with the crowd at the teller's window. Thev went unarmed—but would pretend, usually with a note, to have a gun, hand grenade, or a bottle of acid. Sometimes they carried off the loot in an innocent paper bag. The police took to calling them "note passers" or "bag bandits."

In some ways amateurs are a pain in the neck to the police. They're hard to trace and they're jittery—they just might throw the acid they might be carrying. But police generally figure that the professionals are a worse threat because they're smarter. Novices may start a crime wave, but sooner or later the pros

come in to ride the crest.

Flies at the sugar. From the viewpoint of a crook, bank robbery has one big advantage-it pays off in money. "After all," as New York Police Inspector Raymond Maguire puts it, "you're dealing with a useful commodity. The hijackers or warehouse robbers get maybe 33-percent profit when they sell the stuff. Take a bank and you clear 100 percent,"

In the opinion of some law-enforce-



if YOU'VE SEEN A CRIME, chances are you won't recall all the little details. But you know more than you think. To aid your unconscious memory, police use charts like this. Then they build

a composite drawing of the suspect. Here a Popular Science artist shows how it might have been done for Frank Sprenz, now serving a long term for bank robbery in Ohio.

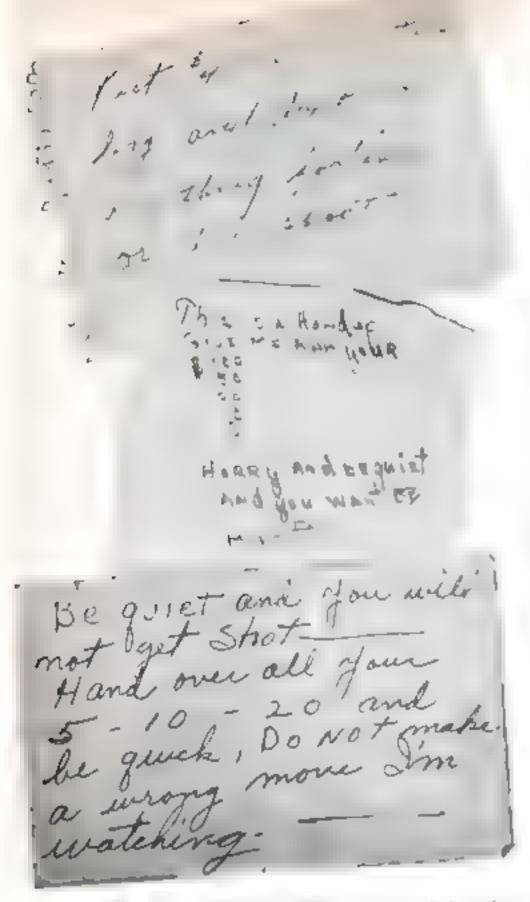
ment experts, this is only part of the story behind the rise in holdups. Neither the amateur nor the pro would have turned to banks, it's argued, if the banks hadn't developed into such pushovers.

The big pitch in bank design after the war has been for them to drop their fortress look and become "friendly." The purpose: to make the depositor feel wanted. And that's the trouble, many authorities complain: They're too friendly. One hard-bitten expert draws a parallel with the preacher's comment on low-cut dresses: "They're an invitation to sin."

Other trends were at work, too. Banks branched widely, spread out to the suburbs and became drive-ins. Tellers were brought out from behind cages and put behind plain counters. Word got around that banks were insured and no teller need risk saying "no" to a gunman.

To war against both kinds of thieves—
the shrewd old hands who've been known
to time holdups to coincide with streetclogging factory-shift changes, as well as
the wild-eyed novice note passers—banksecurity authorities are recommending
some specific robbery preventives. Among
those that can be described are these:

An effective silent alarm. Old-fashioned alarm systems clanged in and outside the bank. This was dangerous; it
brought more people to the scene, and often started the lead flying. Nowadays
banks are increasing wired with silent
alarm systems like those operated by
American District Telegraph or Holmes
Protection Service. When tripped, the
alarm rings in the protection-company
office and is then relayed to the police.
In small towns there may be a direct
hookup with the police station, And in



THESE ARE TYPICAL NOTES recovered by the F.B.I. The \$4,000 man was carrying a toy pistol. Other weapons used range from sawed-off shotguns to buseball buts, acid, hand grenades.

some Midwestern towns the system is rigged to ring in the homes or offices of private citizens. These "vigilantes" hop into their cars, fan out around town, and

set up road blocks.

Time locks and relocking devices. When they first came into use, time locks were tough hurdles for the old-time safe-crackers. They were set so that the vault could only be opened at fixed times of day. Newer forms are trickier. If robbers succeed in timing their operations to coincide, a relocking mechanism may be tripped that again seals the vault doors.

The hidden camera. A concealed movie camera may be fitted to film the robbery. Mosler Safe Company has one called the Photoguard, developed after a

rash of bank robberies in Cleveland. (During one stretch in 1956, there was an average of two jobs a week there.)

On April 12, 1957, a Photoguard was planted in the St. Clair Savings and Loan Association—an institution victimized so often that the cops were calling

it "robbery-prone."

The following day, the bank was held up by a man with a gun and a girl accomplice who scooped the money into a paper bag. A clerk tripped the camera. Within an hour police were studying the developed film. Still shots were sent out to newspapers, and prints of the movie were distributed to TV stations.

The result: The robbers were rounded up within 36 hours. Police traced the man through odd body movements. He turned out to be an epileptic who liked to dance—well known at local dance halls. The girl, too, was traced in part by posture—one reason why authorities say disguises won't fool a camera.

The deterrent effect of this well-publicized capture was fantastic: Cleveland had no more bank robberies for the next

15 months.

But alarms and cameras can function only if they're actuated. The tripping devices themselves have to be made less obvious. Two of the latest are:

A foot rail: The teller slips his toes

under a small ledge and kicks up.

Electrical relays: Little circuit openers or closers are ingeniously placed so that the teller, though seeming to comply with the robber's demands, actually triggers the alarm or camera.

Wider placement of such gadgets is being tried: in washrooms, executive

offices and near telephones.

Teller training. New emphasis has been laid on employee education. Basic holdup precepts call for clear thinking, careful noting of details, and doing no more than the criminal asks. In a tally of New York's 1958 bank robberies, a startling number of tellers gave a robber more money than he'd asked for. Some tellers even returned the note!

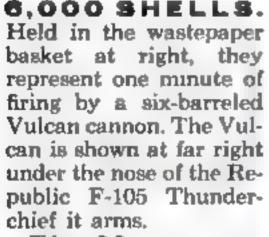
Police now are asking each witness to write his description of the crime as soon as he can—before comparing notes with others. Composite feature charts are used to aid a witness in describing the thieves, and then an artist draws the re-

[Continued on page 270]

PS Picture News





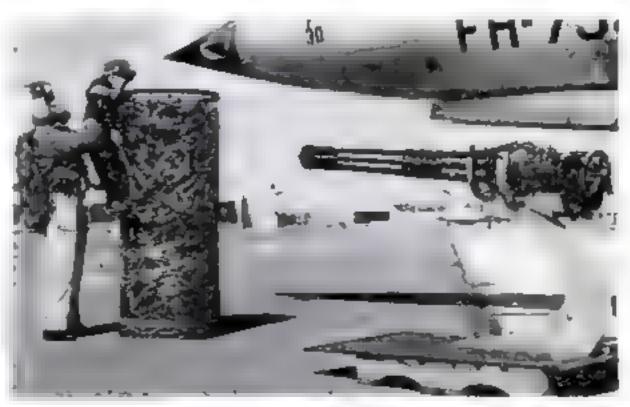


The 20-mm, gun throws a ton of lead a minute, to make the 1,300-m.p.h. fighter-, bomber the world's most powerful one-man plane.





TRENCH DIGGER. This ditching machine scoops a two-foot trench four feet deep (just above) at 12 feet a minute, digs a foxhole (top) in less than two minutes, a machine-gun emplacement in five. It was developed by Army engineers at Fort Belvoir, Va., for air drop to troops on a battlefield.



PS Picture News



GROUND SKIS.

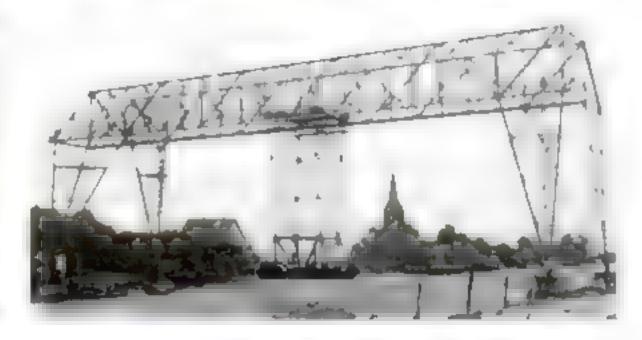
With skiing equipment like this, you don't even need snow. All that's required for yearround practice of jump turns (far left), slaloms and schussing is a smooth sloping lawn.

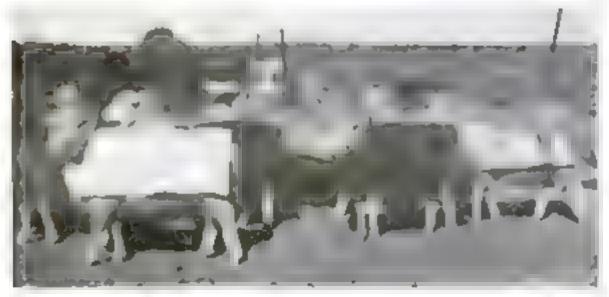
Basically the device resembles ordinary skis, but with rubber-rimmed wheels at front and back. Experts who have used these Land Skis say that action is almost the same as that in snow skiing It is helped by tiny rubber grommets (arrow) at the end of the fork. These allow the rear wheel to swivel five degrees to right and left.

DRY-FOOT FERRY.

The odd structure at right resembles a bridge on which someone forgot to add the approaches. It is a German ferry spanning the Oste River to connect Basbeck and Osten.

Cars and trucks are taken on the ferry platform from docks at either end, transported across the river by motor-driven wheels on overhead rails.





sheep coars. The flock of sheep at left is all dressed up in plastic overcoats. They are used in an experiment by the University of Wyoming to make wool more valuable, by protecting it from dirt,

The white coat in the photo has a cotton-fabric base, the black ones a nylon base, gray ones burlap.



What Causes Those Awful Turnpike Tie-Ups?

Sometimes—for no good reason—cars bunch up, slow to a crawl, then it's bumper to bumper. But smart drivers can help

By Eliot Tozer

HEN you're slowed to a maddening crawl on a 60-m p.h. turnpike, you know the frustrated
feeling the traffic engineers of the New
York State Thruway Authority have
when they look out on Sunday afternoon
and see cars standing still on their new,

six-lane highway. They've seen traffic on their super expressway back up as much as three miles—even when skies are bright and there are no disabled cars to clog the lanes.

Obviously something is wrong. Each 12-foot lane of New York's spanking new Thruway is designed to carry 1,500 cars per hour at 60 m p.h. At least 4,500 cars

"Like an accordion, traffic squeezes up, then spreads out"

per hour should be able to sluice through the toll gate at Spring Valley and then roar south to the huge Tappan Zee Bridge on the Hudson at 50-60 m.p.h.

Yet, on occasion, the cars creep, taillight to headlight, or stand still. Not for this did Detroit design 250-hp, cars.

Why the delays? Even, sometimes, when traffic is light?

The answers that Warren Wells, Thruway Director of Operations, and State Police Capt. Robert Annett came up with—after weeks of study in helicopters, planes and cars—are surprising

They show that Thruway drivers themselves cause the snarls.

To find out how, Wells and I climbed into his Olds 98 one day and cruised south from his Albany headquarters.

It was 4:00 p.m. on a hot August Sunday when we came to the Route 303 interchange in West Nyack, N.Y. He had hung his special Motorola VHF radio receiver on the front-seat window and was standing outside the Olds watching the surge of cars. He was hearing transmissions from troopers and traffic engineers all along the New York (southern) section of the highway, and from the Communications Center in Albany.

"Let's head north," he said, "Harri-

man interchange just called. The count is up to 3,500 per hour."

He tooled the Olds onto the entrance ramp. On the acceleration strip, or entrance lane that fuses into the right-hand ribbon, he hit 50-plus. When he turned onto the Thruway itself, we were cruising at max allowable, 60 m.p h.

The slowdowns. "Interchanges like this give us a lot of trouble," he said. "We get what we call 'marginal friction.' Cars enter traffic at low speeds and slow down several of the cars coming up behind them. They ought to get rolling on the acceleration strip and enter the highway at traffic speed.

"Same thing when they turn off. They slow down while they're still on the highway, instead of turning off at high speed and slowing on the deceleration strip."

Wells gave her a touch more power. "Hills like this are another trouble-maker," he said. "Drivers let their speed drop way down and traffic begins to string out. Then—and we've never been able to figure out why—they take forever accelerating back to normal speed again. Sometimes the slowdown is felt a couple of miles back,"

He picked up his mike. "Seven Zero

How You Can Help



In the words of one Thruway trooper, "Drivers make the difference when it comes to keeping traffic flowing." Here are his rules-of-thumb:

 Accelerate quickly when you leave a toll gate.

- Don't slow down to rubberneck.
- Add power to maintain speed on long upgrades.
- Accelerate to traffic speed before you swing onto the highway
- Decelerate on the deceleration strip
 —after you leave the highway.

In addition, try to make use of all lanes, especially at a toll gate. And, when traffic is heavy, drive in the righthand or center lane. Chances are that traffic here is moving as fast as traffic in the speed lane.



ONE REASON FOR JAM-UPS: Approaching a toll gate, drivers tend to crowd into the three or

four center lanes. Then, to make matters worse, Mey are often too slow in pulling away

One from Car Six, I'll be at Spring Valley in five minutes."

He put the mike on the seat beside him. "The 'Seven' numbers are troopers," he said, "That's Lt. Barber. He can take you up to Harriman for a look-see."

Lt. Richard Barber, commander of the State Police on the Thruway section, was trim and tanned, with close-cut gray hair. "Traffic is picking up fast," he told Wells.

"When you get back, we'll watch it from the Palisades Interstate Parkway Bridge," Wells said, "It may get really rough later, if those clouds open up."

Barber and I walked toward his Ford. "What do you think causes the bottle-necks, Lieutenant?" I asked.

Waiting at the gates. He pointed to the toll gates, "There's one of the causes," he said. "Some drivers just won't use all the lanes available. They have 12 open southbound lanes to use right now, but they're using only 10 of them. And they mostly use the three or four center ones."

I looked. Ten or 12 cars were waiting at the toll gate in each of the three center lanes. In most of the others there were only a couple of cars.

Barber smiled. "Same thing holds true out on the highway," he said.

"The outside lane is used only 65 per-

cent of the time and the center lane only 85 percent. We found that out in helicopter counts. If drivers would use all three lanes, especially when we're running peak traffic, we'd have fewer jamups, maybe none."

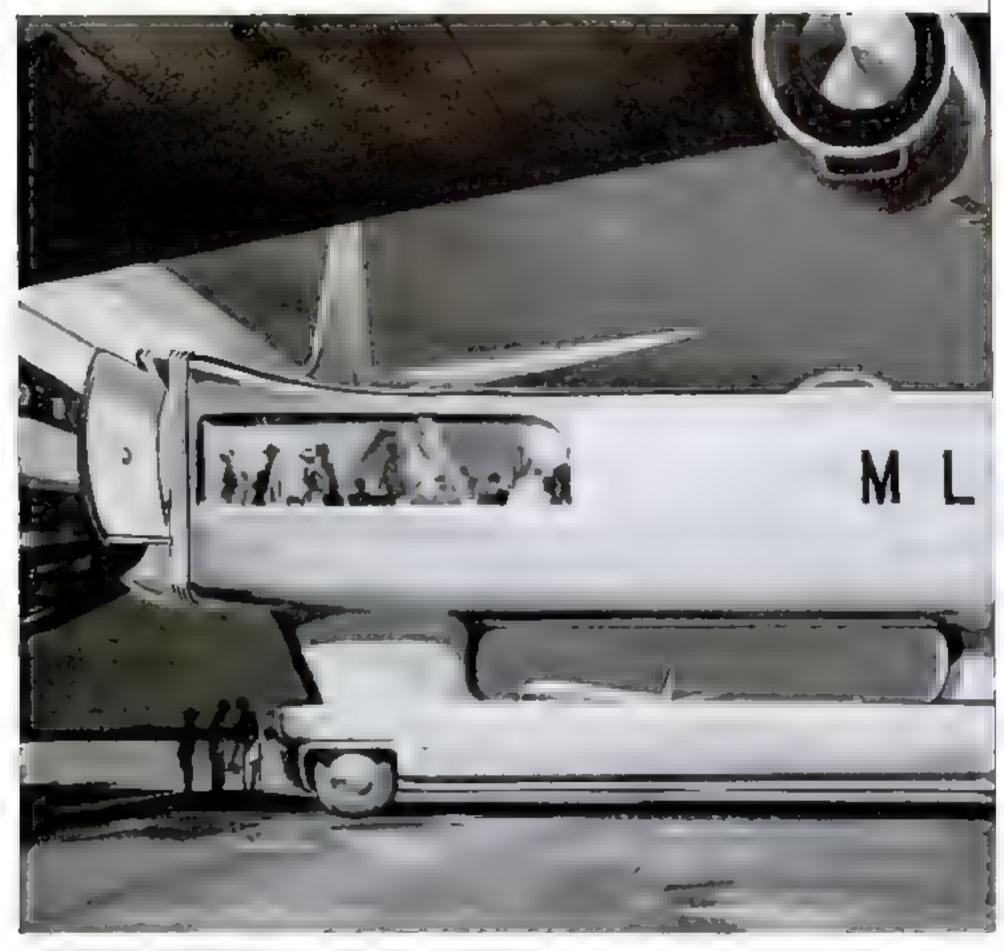
"Wait a minute," I said. "Trucks and buses have to use the right lane. The Thruway speed limit for them is only 50 m.p.h. Do you expect cars to drive behind buses and trucks?"

"When we're running heavy, everything's going at the same speed," he said,

[Continued on page 252]

INTERCHANGES MAKE TROUBLE, TOO. Cars enter the traffic stream at low speeds, holding up cars behind them. They ought to get rolling close to the maximum while on the acceleration strip.



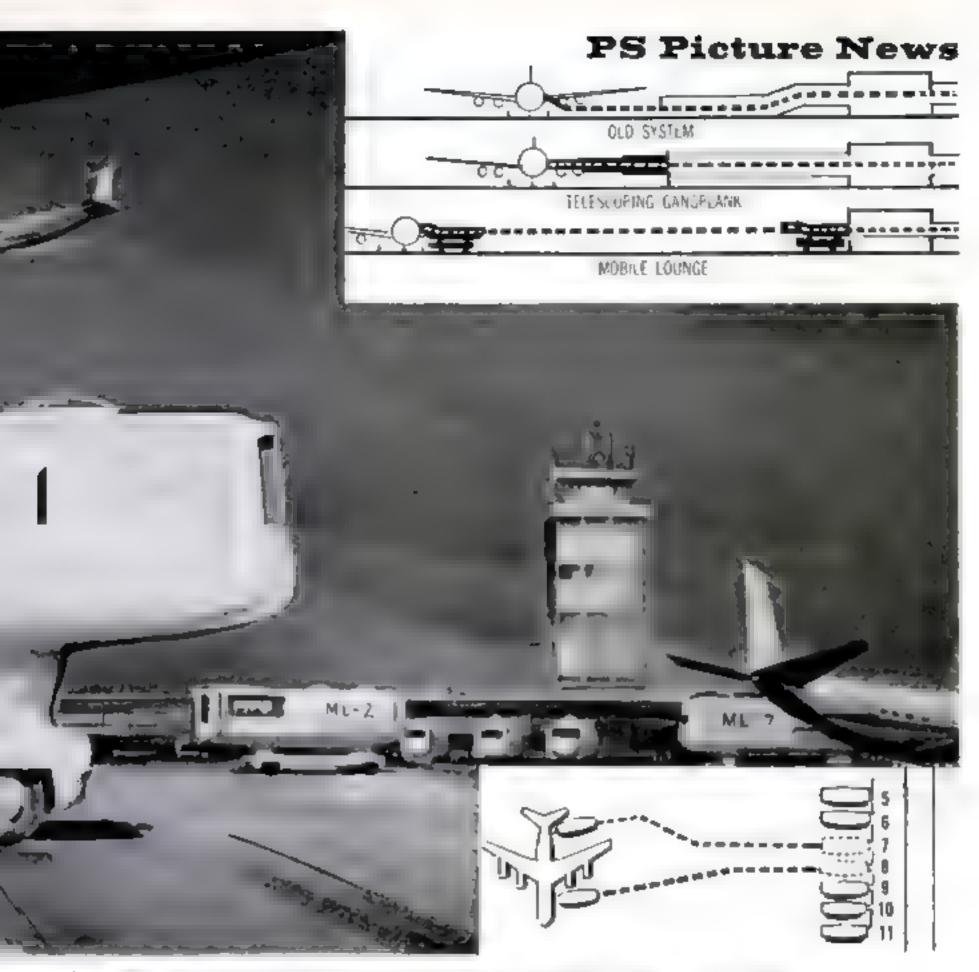


AIRPORT FERRY. Jets often load and discharge passengers far from their terminals. So the Federal Aviation Agency has adopted a radical idea for the all-jet Dulles International Airport to be opened at Chantilly, Va., in 1961. Long hikes in open or telescoping gangplanks (inset upper right) will be unnecessary. Instead, passengers will ride in 15-by-60-



ire. It's assembled at Tralee, County Kerry. Parts, made in England, include an Austin A55 four-cylinder engine that does 90 m.p.h., gets 37 miles to a gallon. The hardtop is removable,

76 POPULAR SCIENCE SEPTEMBER 1939



foot plane-level mobile lounges on wheeled stilts, driven from either end. Where jets load fore and aft, two will be provided (lower right), one for passengers to be seated up front and one for those in the rear Passengers will enter at designated gates, take seats and be wheeled away in comfort to waiting planes.

LUMBER LOADER. Special trucks with detachable bodies having built-in jacks are used by the Bangor and Aroostook Railroad to load lumber at a new 22-car siding in the Maine woods. The trucks bring in loads, lower the jacks, pull out from under and drive off for more, leaving their loads for transfer to trains.



In one violent raid, a bomb buried itself 12 feet deep in London's Manor Park. Digging, disposers found a dreaded hookup: clockwork and trembler fuses.

Now it can be told: Secrets of

Britain now reveals how her experts fought a deadly battle of wits with German technicians

By Harry Walton

BOMB that doesn't go off is as cruel a challenge to courage as one that does. In the blitz of England, one in every 10 that fell did not immediately explode. Homes had to be evacuated, factories idled, transport disrupted until such bombs were dealt with.

Some were duds. More were deliberately rigged to explode after an unguessable delay, Clockwork fuses made working on any bomb a ghastly gamble Hair-trigger switches blew bombs up as diggers uncovered them. Others lay doggo until a luckless disposal officer



No ticking was heard through a stethoscope. But knowing the danger, Captain M. F. Blaney attached an electromagnetic clock stopper.

the War Against Time Bombs

undertook to withdraw the deadly fuse.

Cloaked in strict secrecy—for knowledge of successes and failures would have been priceless to the Germans—British experts in World War II fought a battle of wits, mechanical ingenuity, and raw courage with Nazi armorers. Only now, almost 20 years later, can some of the maneuvers in this deadly game be revealed. The story is chillingly told in a recent book by Major A. B. Hartley of the Royal Engineers.*

Though prepared for raids, the British were not equipped at first to deal with the aftermath of time-delayed bombs. The first hint of this came with the removal of an unfamiliar German fuse on August 13, 1940. Ticking ominously, it was gingerly disassembled by experts.

*Unexploded Bomb, by Major A. B. Hartley; published by R', R'. Norton & Company, New York

They removed the detonator but let the clock run. It released its struker 38³/₄ hours after the bomb fell.

Clockwork was treacherous. It might be set to run any time from two to 80 hours. Worse, it was unreliable. "Bomb disposers learned from bitter experience that the clockwork had a habit of stopping," writes Major Hartley. "But a slight jog might restart it, and almost invariably it would turn out to have stopped a very short time before it was due to initiate the explosion."

What were they like, the men who came to hand grips with ticking death? In that grim year of 1940 the average life expectancy of a disposal officer was 10 weeks. A candidate for the Bomb Disposal Service, its members would say, had to be "careful, strong, single, fleet of foot—and prepared for the afterlife."



Thinking the condensers in the fuse dead, he planned to remove the bomb and later steam out the TNT. But first he had to take off the stopper.



Pulled out, the bomb dangled above ground. As Blaney put a hand out to steady it, it blew up. Condensers later proved to hold a charge 60 days.



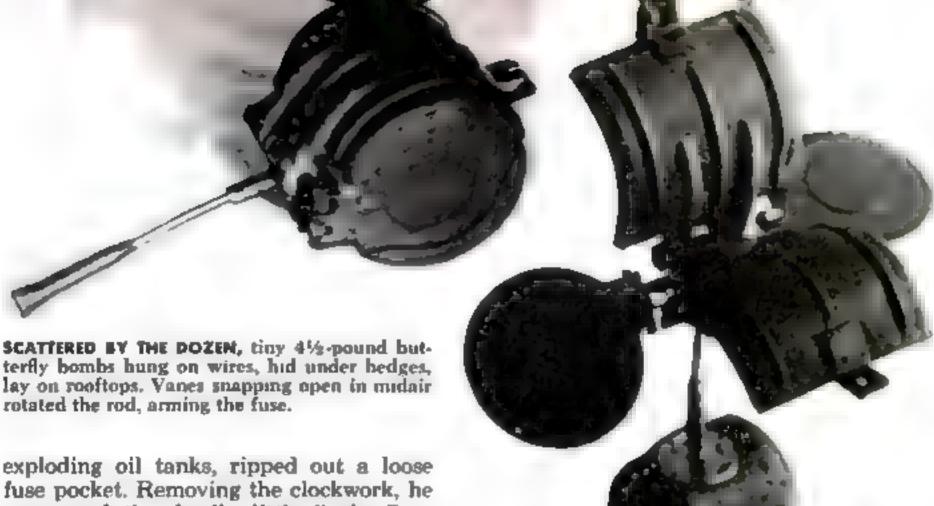
Yerres raced electricity in disarming the bombs. The Germans used electric fuses, powered by condensers charged at the instant the bomb fell from the plane. When the charging head pulled away from the two spring plungers on the fuse boss, the plungers snapped back, breaking contact with the live circuits.

Discharging the condensers was the obvious way to disarm such fuses. But pressing down the plungers might actuate sensitive trembler switches. One early tool for the job had a hydrautically operated pin for each plunger, connected to a 450-foot oil-filled hose. The disposer pushed the plungers from a distance

Clockwork made this method obsolete. The clock was merely started by the electric fuse; thereafter it ran its fatal course unaided. The only way to stop the clockwork for good was to yank it out

Only a bomb disposer knew what it took to hammer loose a locking ring and draw out the mechanism. Dropping a tool might mean the few seconds delay that made the difference between life and death.

The Germans next gimmicked the clockwork fuse. Late in August, 1940, a Lieutenant Archer, amid the Cames of



exploding oil tanks, ripped out a loose fuse pocket. Removing the clockwork, he unscrewed the deadly little "gaine," or initiating charge, from it. Then he saw something else inside, with a second gaine. An instant after he unscrewed this—a miniature bomb itself—the cap flashed.

He had removed a ZUS 40, an antihandling trap with a spring-loaded pin that should have blasted the bomb when he withdrew the clockwork. A mechanical defect had saved him.

Cooking out high explosive was one answer to such booby traps. A remote-controlled, steam-powered drill cut a hole in the bomb and then injected live steam. The emulsified TNT ran out.

But not always. One disposer steamed out a bomb, and called two other men to remove the supposedly empty casing. The bomb went up, killing all three. Only half the filling had been removed.

A training-center sergeant, emptying a modest 110-pounder, tried hot water instead of steam. Pouring it on, he puddled and spooned out the explosive with a stick. At noon he went off to lunch.

TNT resents being softened and rehardened. Soon after the sergeant returned to the task, the mess went up.

In September, 1940, the Germans sent over a new fuse with wire-sprung switches so delicate that in one test they reacted to a pencil tap on the bomb case. Worse still, the condensers could hold a charge two months.

Teamed with clockwork, this supersensitive fuse posed an almost insoluble problem. A magnetic clock stopper would indeed stop the clock—but its field would

[Continued on page 256]

above could not be disarmed, but only detonated. Fuses were so sensitive that an exploding bomb set off others nearby in a chain reaction, This made every hidden bomb a booby trap. Some, painted yellow, attracted children.

AN EARLY FUSE EXTRACTOR known as Freddy was clamped on the bomb, its head gripping the fuse boss. The disposer then pierced a sodawater fearbon dioxide) cartridge. He had two minutes to seek cover before the gas-powered rig began pulling out the impredictable fuse





FROM THE LABS:

Cars That <u>Never</u> Need a Grease Job

Out go the grease fittings as new plastics, rubber, sealed bearings smooth your ride

REASE guns and lube racks are doomed. New cars will never need a grease job. They will be lubricated for life at the factory. Several nolube makes are already being built in Europe, and the first U. S. model may roll off the line this fall.

Ford engineers have been thinking about scrapping all grease fittings from 1960 Thunderbirds—they would have done the same with their new little Falcons if they'd had more time for testing

But even if Ford decides not to go lubeless for 1960, it will be just a stay of execution for grease fittings. Several makes will eliminate them in 1961, and by '62 or '63 all cars should be lube-free.

All chassis points that have required periodic greasing will be protected against friction by one of three means;

- Bushings and bearings of plastic, including new plastic fibers.
 - Shackles and bushings of rubber.
- Sealed reservoirs containing improved lubricants.

You'll no longer have to take the old bus on its periodic pilgrimage to the lube rack at the corner station. And you'll save close to \$20 a year.

The lubeless car climaxes a trend that started 10 years ago. In 1950, new models carried, on the average, 24.3 fittings to be greased. By 1958 the average had dropped to 10.7 lube points.

There are three major reasons for this eight-year decline of nearly 60 percent—and for engineers' efforts to get rid of the fittings that still remain.

 Many car owners don't bother to lubricate regularly

 The lubricants don't always do the job they're supposed to do.

Lube service is often slipshod.

Result is that parts wear more rapidly than they should and owners don't get the steering ease and riding comfort that are built into their cars.

People-proof cars. First big step in solving these problems—making cars "people-proof," is the way they put it in Detroit—was development of ball-joint front suspensions. This permitted drastic reductions in the number of grease fittings needed. Lincoln dropped from 28 lube points in 1951 to just 13 in 1952,



smoother ribe of new greaseless bearings was demonstrated by test car (left), which compared them with standard type in ball-joint suspension and steering linkage. Cables carned performance data to recorders in monitor car at right.

when ball joints were introduced. Chevrolet went from 25 fittings to 10 when it changed over to ball joints.

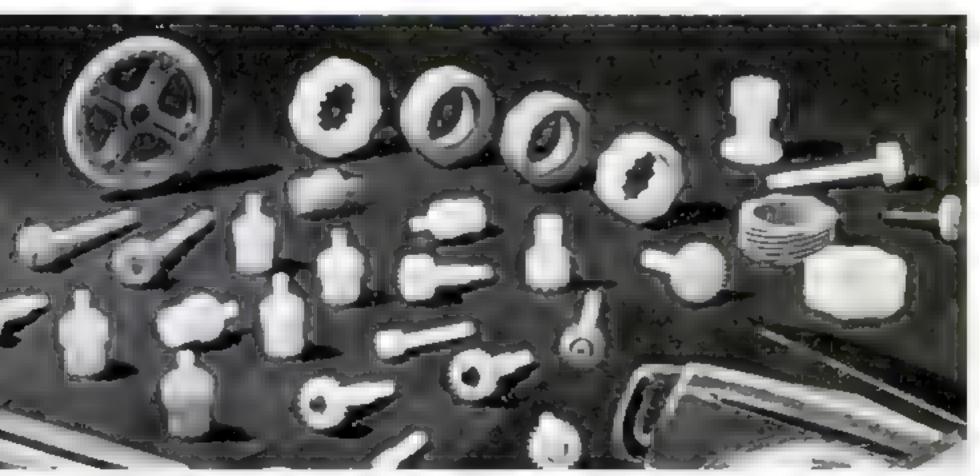
Increased use of rubber bushings and eye shackles as insulators between metal-to-metal contact points has helped, too. More recently, improvements in sealing materials have made it possible to add a lifetime supply of lubricant to some parts right on the assembly line, then button them up and forget about them.

Plastics have played an important part in eliminating grease fittings—and their role will be even bigger.

The key plastic is Teflon, the fluorocarbon developed by Dupont, Telflon is

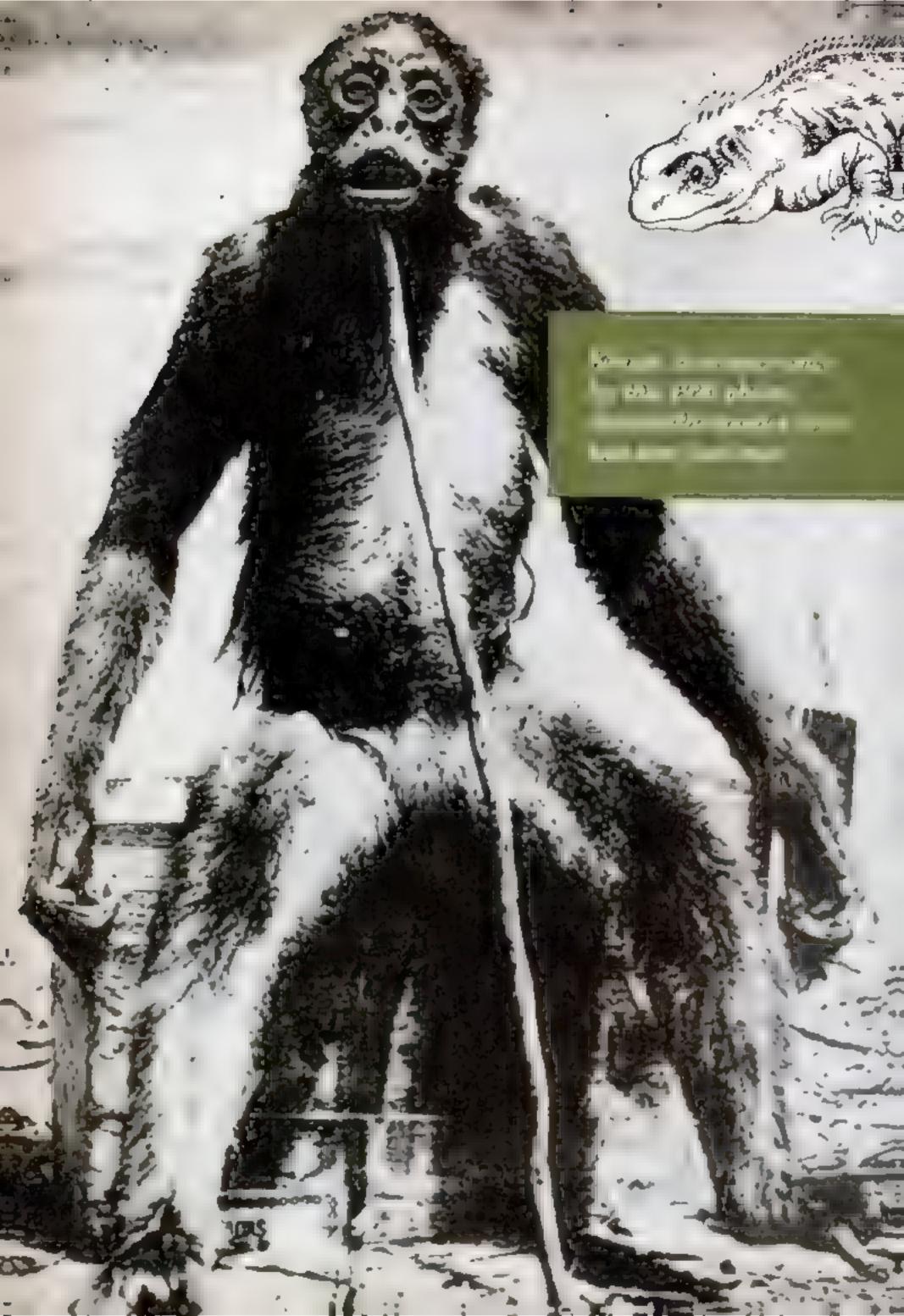
(Continued on page 250)

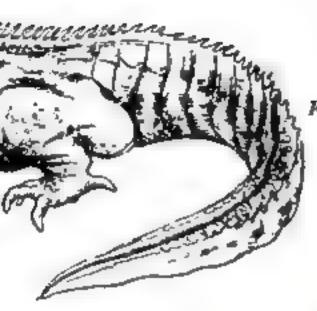
PLASTIC CLOTH is key to lubeless car. It eliminates need for grease in ball-joint suspension (above). Cloth, woven from extremely slippery Teflon fibers, is formed into cup and bonded inside bearing socket. Metal ball slides smoothly and easily on cloth, which is better than grease; more even, more dependable—and permanent.



PLASTIC PARTS—these are Zytel nylon—eliminate small lubrication jobs. No-lube car also

uses rubber shackles, permanently sealed-inoil bearings to replace joints once greased.





A legend that turned into an ugly fact: the Kamodo Dragon.

> Deep in the "targa the harry mammoth may still trumper us defiant call



DO "EXTINCT" ANIMALS STILL SURVIVE?

A closer look into the world's unexplored jungles and wastelands may reveal some strange creatures, says a noted biologist

By Everett H. Ortner

OES the hairy mammoth, ancient cousin of the elephant, still nip mosses in some frozen Siberian fastness that man has not yet explored? Does the giant moa, a flightless bird that stood 12 feet high, still lay its eggs, big enough to make omelets for 70 people, deep in the New Zealand forests? Is the Impossible Waitoreke possible?

These things may well be, says one eminent zoologist, who considers that reports of the demise of many beasts that roamed the world eons ago are greatly exaggerated, and that still others, whose rumored existence is scoffed at by scientists, are nonetheless alive and waiting to be discovered and stuffed. The expert: Dr. Bernard Heuvelmans, a Belgian whose book setting forth these and other claims has just been translated into English under the title, On the Track of Unknown Animals (Hill and Wang, Inc., New York; \$6.95).

Consider the Komodo Dragon, says Dr. Heuvelmans. Back in 1912, an airman who made a forced landing on the Malay island of Komodo reported that he had seen fierce dragons there that ate—according to the natives—pigs, goats and deer, and even attacked horses. Zoologists ignored the report when it appeared that the unlucky flier had no university degrees in zoology.

But soon afterward, the Dutch civil administrator obtained the skin of an enormous lizard that matched the "dragon's" description. And shortly after that, several more—evil-eyed, 12 foot monsters—were captured alive.





If the Impossible Waitoreke is possible, many textbooks



turning the legend of the Komodo Dragon into an undeniable scientific fact.

Or take the case of the coclacanth, a forbidding fossil fish whose obituary, written by paleontologists, had put its time of death at some 70,000,000 years ago. In 1938, one swam, seemingly out of the Mesozoic era, into a South African fisherman's dragnet. Since 1952, flicking fresh salt spray on the scientists' wounds, a number have been captured alive.

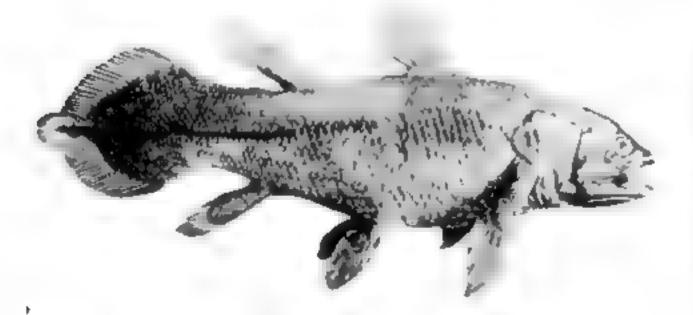
Sorting the new ones. What are the chances of an animal's being unknown to science? Less than in the past, but still excellent, according to Dr. Heuvelmans. His reasoning: Two centuries ago, when animals first began to be classified systematically, only 808 amphibians, reptiles, mammals and birds were known. By the beginning of the present century, the number had increased to more than 21,000, By 1960, Dr. Heuvelmans estimates, 60,000 creatures will have been described and named. Since the beginning

of the century, he says, approximately 15 previously unknown reptiles or amphibians, 220 mammals and 400 birds have been described each year.

"This does not mean that they were all really new," he adds. "Many zoologists create new species and subspecies on the strength of barely perceptible differences. All the same, we can reckon that one in 10 of these descriptions refers to a clearly distinct species. Therefore each year the catalogue includes some 40 birds and 20 mammals that were hitherto unknown," Most of these are small songbirds, little rodents or bats, or even small marsupials or insect eaters, "Reptiles and amphibians are much rarer and almost an exception," he says, "There are no more than one or two a year."

Probing the far corners. Where are these unknown creatures to be found? All over, says Dr. Heuvelmans, but especially in those areas of the world that are little known or even unexplored. Excluding Antarctica, these make up a tenth of the world's surface. The central and northern parts of Greenland, for example, have never been trod by a white man. Much of Africa is known only by aerial photographs. In Asia, there are the Himalayas and much of Siberia, China, Burma. India. The Arabian desert of Dahana is, according to one geographer, "the least explored in the world-infinitely less well-known than the poles."

"Nothing whatever is known about the mountainous center of New Guinea," says Dr. Heuvelmans, "except that various tribes, many of them pygmies, still live there in the Slone Age. In 1938 the American naturalist Richard Archbold



A survival from the Mesozoic era of 70,000,000 years ago, the coelaranth had long been written off by scientists as extinct. But in 1938 one was caught in South Africa, and since then many more of the fossil fish have swum into scientists' hands.

will have to be junked

accidentally discovered in the western part of the island an excellently irrigated valley inhabited by 60,000 people. And in June, 1954, patrol aircraft found quite unknown tribes in valleys in the southwest. Their population was estimated at 100,000, a third of the number of Papuans already known,"

Australia? Most of the interior is covered with deserts of sand, salt and thorny bush. "Hardly anybody goes there," says Dr. Heuvelmans, "except a few prospectors, who come back with tales of animals so fantastic that they are usually thought to be drunken visions." There are even whole mountain ranges that have never been seen except from airplanes.

But the continent that holds the most mysteries is surely South America, with its steaming, tropical jungles—2,000,000 square miles for the Amazon basin alone. Where the Orinoco River rises, in one corner of Venezuela, are vast limestone plateaus—mesas—3,000 to 10,000 feet above the surrounding jungle. Some of these are almost 20 miles long, great islands of thick vegetation about which almost nothing is known. On one of these is a waterfall 15 times as high as Niagara. It was discovered only 20 years ago.

The dragon-bird. Strange legends hang over all these unexplored areas. One traveler in Africa, Frank H. Melland, heard from the natives of Northern Rhodesia of a fierce creature that lived in the nearby Jiundu awamp—like a bird, but not exactly a bird; more like a lizard with wings of skin like a bat's.

Melland noted this down, but only later did he realize its hair-raising implications. Then he renewed his questioning. The beast's wing span, they said, was between four and seven feet; it had no feathers at all; its skin was bare and smooth; its beak was full of teeth.

Meliand was staggered. What he had was a complete description of a pterodactyl—a giant flesh-eating flying dragon known only to paleontologists, and supposedly extinct for tens of millions of years.

When Melland showed the natives pictures of a reconstruction of a pterodactyl, they nodded and muttered excitedly: "Kongamato!"

Other travelers also heard of the



A "living fossil" that carries its age well, the giant tortoise of the Galapagos Islands has remained almost unchanged for 190,000,000 years.

strange flying beast, but only one of them
—Ivan T. Sanderson, leader of an expedition into West Africa—ever saw it.
Working along a river, he shot a fruiteating bat, went into the water to recover it. Suddenly his companion shouted:
"Look out!"

"And I looked," Sanderson later reported. "Then I let out a shout also and instantly bobbed down under the water, because, coming straight at me only a few feet above the water was a black thing the size of an eagle. I had only a glimpse of its face, yet that was quite sufficient, for its lower jaw hung open and bore a semicircle of pointed white



Could this ugly snout be mistaken in the dark jungle? The mandrill, a flerce African baboon, may be the reality behind native tales of a strange and dangerous bear.

teeth set about their own width apart from each other."

The living apemen. Across the Sunda Straits from Java, where 65 years ago were dug up the skull fragments that scientists have assigned to a creature they call pithecanthropus erectus—apeman who stands up—natives speak of another apeman, believed to exist today. The Dutch settlers call him "orang pendek" (little man) or "orang letjo" (gibbering man).

A small creature, between 21/2 and five feet tall, the orang pendek is said to speak an unintelligible language. Reports

gay that its skin is pinkish brown, and covered all over with short dark hair. It has no tail. It walks on the ground. It is known, says Heuvelmans, all over southern Sumatra below the Equator, and has been described many times.

Perhaps the man to get nearest to one was a Dutchman named van Herwaarden, a curious man who climbed a tree to study, at close range, one of the creatures hiding there.

"The very dark hair on its head fell just below the shoulder blades or even almost to the waist."

he reported later. "The brown face was almost hairless, whilst its forehead seemed to be high rather than low. The eyes were frankly moving; they were of the darkest color, very lively, and like human eyes. This specimen was of the female sex and

about five feet high.

"There was nothing repulsive or ugly about its face, nor was it at all apelike, although the quick nervous movements of its eyes and mouth were very like those of a monkey in distress. I began to talk in a calm and friendly way, but it did not make much difference. When I raised my gun to the little female I heard a plaintive 'hu-hu,' which was at once answered by similar echoes in the forest."

When the creature, eluding van Herwaarden, slid down the tree and fled, the Dutchman raised his rifle to fire. But: "Many people may think me childish if I say when I saw its flying hair in my sights I did not pull the trigger," he said later. "I suddenly felt that I was going to commit murder."

Could an anthropoid—a large, tailless ape with long arms—exist in the Americas? Scientists doubted it, until in 1920 a Swiss geologist, François de Loys, brought back evidence from the Sierra de Perijaá, a mountain range that bestrides the Colombian-Venezuelan border. At-

> tacked by two ferocious giant monkeys, five feet tall, de Loya' party killed one, propped it up on a crate, and photographed it (page 84). Scientists are still puzzling over how to classify it.

Mystery in armor plate. Many other shadowy creatures pace through Dr. Heuvelman's bestiary of unknown animals. The neomylodon, a cousin of both the sloth and armadillo, is one Here there is more to go on than just native rumors. The anımalə—big as oxen —have left, curiously preserved in an

Argentinian cave, skeletons, droppings, even wisps of the hay they fed on. And there are several pieces of hide.

Apparently the neomylodon was on its evolutionary way to developing an armor plate like that of its cousin the armadillo, for it is a strange hide, of thickish leather with bony nodules—like pebbles—embedded in it. And here scientists disagree. Are these bits of hide from an animal that lived recently, or were they mummified by the cave's atmosphere? Members of the London Zoological Society, who examined a piece in 1899, thought it fresh: The leather was supple, there were remains of muscles and ligaments, and a

[Continued on page 278]

Where'd it come from?



Acre: How much land could a man plow in a day with a yoke of oxen? That was an acre long before the days of standardization. Henry VIII later fixed it as the area of a strip 40 rods by 4 (implying, of course, a standard rod). Today's acre is still 160 square rods (and our rod is 161/2 feet); roughly, a plot 200 feet square.



Russia Shows Off the World's Biggest Airliner

A AIRLINER with a capacity of 220 passengers—the world's biggest—landed at New York's International Airport recently for display in connection with a science and technical exhibition. The airliner was Russian, a product of Andrei Tupolev, who also designs bombers.

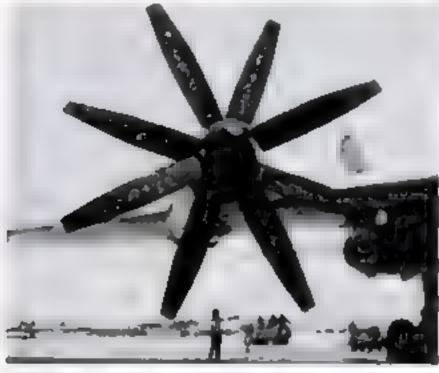
The Tu-114, as it is designated, weighs almost 200 tons, or 75 tons more than the biggest of America's operational airliners. It's so tall that a five-foot ladder had to

be put on top of the airport's highest boarding ramp to deplane the passengers. A turboprop, it flew the 4,665 miles from Moscow to New York nonstop in 11 hours and six minutes at an average speed of 420 miles an hour against headwinds.

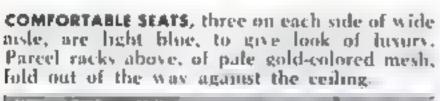
The Tu-114 will tote 220 passengers only on short, tourist-class hops. It was designed to carry 170 passengers on the trans-Siberian run and 120 in long non-stop service such as that between Moscow and New York.—Devon Francis.



Gant of the skies is powered by four gas-turbine engines developing 12,000 horsepower each.



TURBINES DRIVE EIGHT MUGE PROPS, two to each engine, contrarotating. For intercontinental flights, the plane's wing fuel cells can hold 65 tons, or almost 20,000 gallons of kerosene.







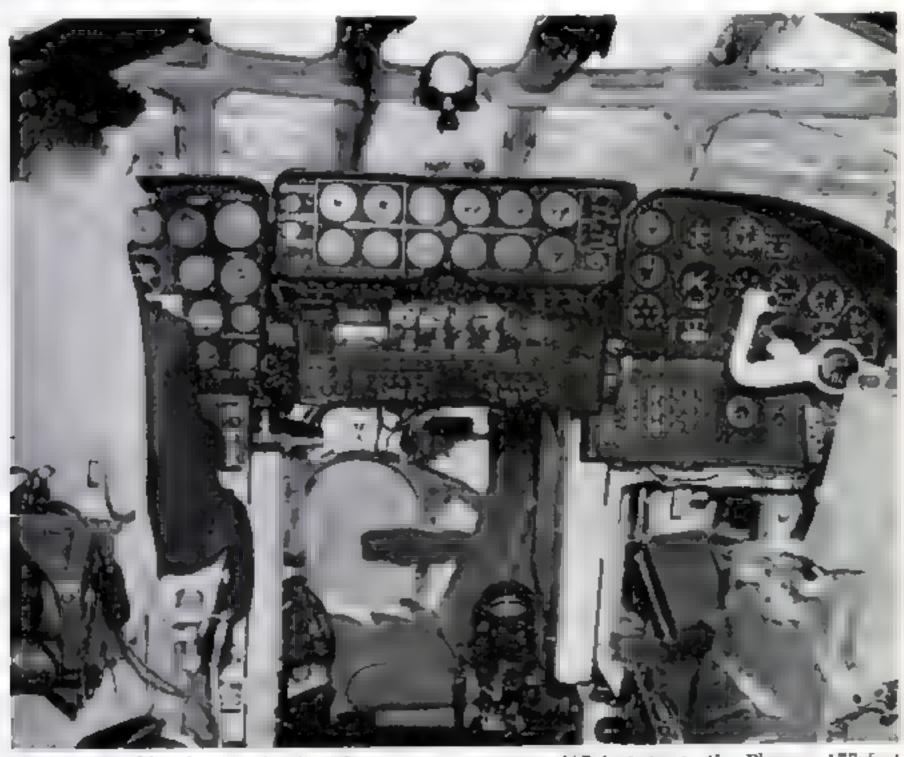
AMIDSHIPS IS THE DINING AREA with yachtlike folding tables accommodating three persons on each side. A lamp sits on one end, Behind the panel are emergency oxygen masks

PRIVATE COMPARTMENTS are the most unusual feature of Tu-114. Like those on European trains, they have curtained doorways, glass panels fronting on corndor. They seat six





It cruised at 33,000 feet on the way to New York, and carried 30 tons of passengers and freight.



FLIGHT DECK, like those in U. S. airliners, is a maze of instruments and controls. The wing

measures 167 feet, tip to tip. Plane is 177 feet long. Its top speed is 540 m.p.h.



BIRD DOG. This determined tree-climbing pooch is the pet of 18-year-old Milton



BANANA PEELER. PS fans of Goliathus goliathus [shown lifesize Mar '59] will be sorry to hear that the world's biggest bug died recently at the American Museum of Natural History in New York, He lived seven months on bananas.



RAIL RIDER. The little single-track "gondola" above is the smallest freight car in the New York City subway system. Maintenance workers push it along the rails for easy transporting of nuts and bolts needed for track repairs.

PS Picture News



Alexander of Commerce Ga He answers to the name of Tip. His breed's unspecified,

SPORTY SWEDE.

Volvo will come out next year with its first sports model. The little car (right) will be exported to the U.S. It will be entirely Swedish except for a body built in England from Volvo designs. The car is 173 inches long, has a 96.5-inch wheelbase, a 51.2-inch tread....

SAAB is now building a station wagon—pardon, family car. With two back benches folded down, it has floor space, measuring three by five feet, that will hold 660 pounds of cargo. The auxiliary rear seat faces backwards for an unusual view through the rear window

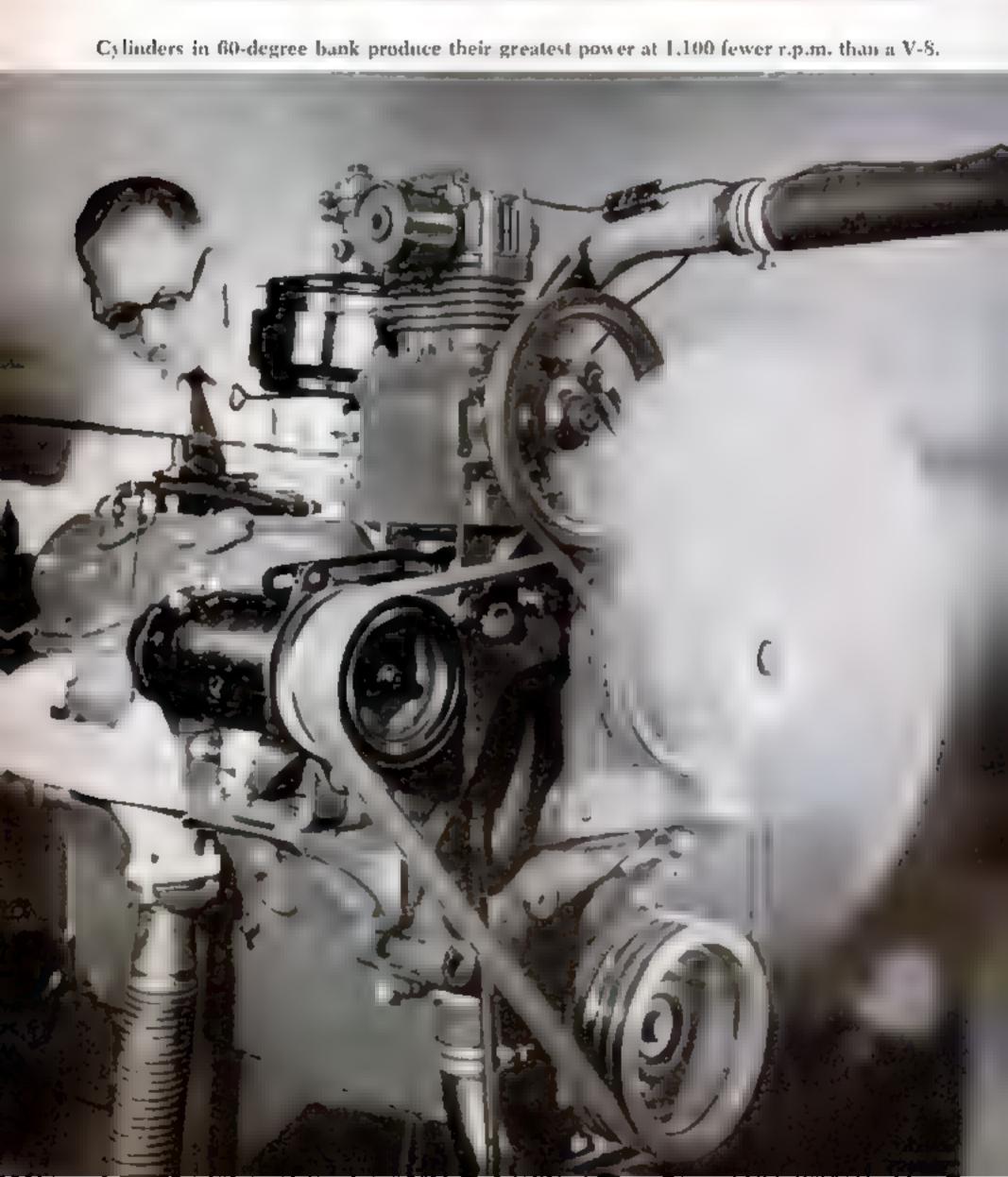




Detroit's First

V-6 Engine

Developing an astonishing amount of torque at low speed, it promises up to 200,000 miles of use without major overhaul



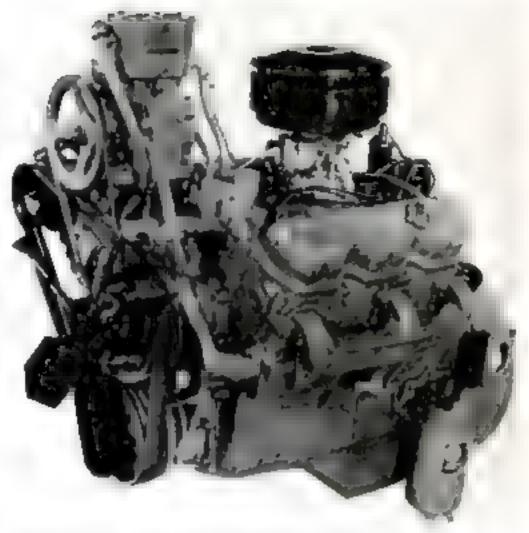
By Ken Fermoyle

HECK the water and oil?" I nodded yes and the gas-station attendant raised the hood of a GMC Suburban heavy-duty station wagon. He glanced at the engine, then did a fast double-take.

He counted, "... four, five, six," then scratched his head in amazement, "What's this? A V-8 with only six spark plugs!"

Not quite. Masked in the dowdy wagon was an exciting new V-6, developed by GMC Truck and Coach Division. A 60-degree V-type design, it will come in 6-and 12-cylinder versions. More important, it will mark the first time that Detroit has brought a V-6 out of the experimental labs and offered it to the paying customers. Italy's Lancia has, of course, had a V-6 for years; and it's been an open secret that both GM and Chrysler engineers have been tinkering with these unorthodox power plants.

They're not in production yet—the Suburban that GMC let me have was powered by an experimental job. But you



OFITING AT PLUGS is simplicity itself—because they're on top, between the valve covers. Deep crankcase extends well below the crankshaft centerline. The oil pan is big. Crankshafts have four main bearings and six connecting-rod journals spaced 60 degrees apart.

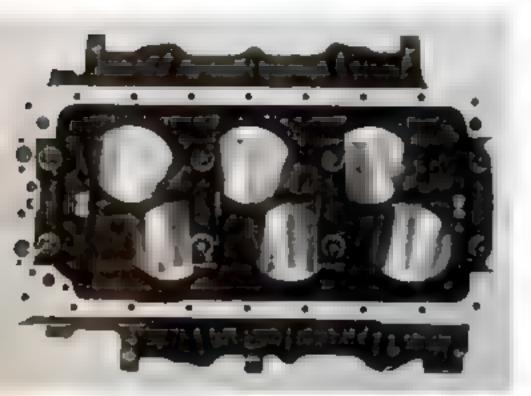
Oil Filter is easy to service. Placed at lower left of block, it is full-flow type with bypass valve

to permit circulation of oil even if throw-away paper element should become clogged.





FOR MAXIMUM HEAT DISSIPATION, bores of all V-6s and twin-sixes, shown here in sawed-through cutaway, are completely surrounded by coolant. Pistons are heavy-duty cast aluminum.



BOTTOM VIEW OF V-6 SLOCK shows offset of cylinders that helps make 60-degree banks possible Narrowness lets it sit between frame rails without interfering with steering.

couldn't be blamed for guessing that they will soon replace the V-8 and in-line six-cylinder gas engines that GMC now uses.

The new engines come in four sizes. Three are V-6s, displacing 305, 351 and 401 cubic inches. The fourth is a whopping 702-cu,-in. V-12—or Twin Six, as it is called at GMC headquarters. Gross horsepower ratings, not official yet, range from 150 at 3,600 r.p.m. for one version of the 305 engine to 275 at 2,400 r.p.m. for the big V-12.

For the truck driver, the muscular torque curves of the new engines promise a lot less work with the shift lever. For the general motorist, they promise less frustration behind crawling trucks.

How do these power plants compare with conventional truck engines? They

don't, according to Phil Monaghan, GMC's boss. "Not only do they differ in design, they're far superior to existing engines. They have a potential of between 100,000 and 200,000 miles of continuous operation without major overhaul."

Other advantages include:

 Compact size; shorter than in-line engines, narrower than V-8s.

 Excellent performance; tremendous low-speed torque and plenty of reserve power.

 Superior fuel economy on regular gas, due to low friction and high combustion efficiency.

 High degree of parts interchangeability.

Easy servicing; parts that need periodic attention are very accessible.

Some of these points showed up quickly in the experimental Suburban that GMC proudly turned over to me

"Do whatever you like with it," said Monaghan. "But remember that this is strictly a 1959 model except for the engine. It won't give you the full picture of how good vehicles specially tailored for these engines can be."

I was still impressed.

A run through truffic from Pontiac to Detroit was my first experience behind the 150-hp., 350-cu.-in. engine. Although the engine was tight, it jumped the heavy wagon away from lights at a rate that surprised me. The V-6 also pulled very smoothly from low speeds in high gear I could drop below 15 m p.h. and still accelerate quickly and easily in high—something that conventional sixes don't do happily.

Next day I checked fuel mileage in rush-hour traffic. I apent several hours driving the type of stop-start pattern the engine would encounter in delivery or pickup truck service. I didn't baby the Suburban. Its acceleration was used freely in getting away from lights and taking advantages of holes in traffic. Then came a stint on expressways, running at legal limits of 55 and 65 mph. In the afternoon it was back to crosstown shift-change traffic of the bumper-to-bumper variety. I expected an average of 11-12 m.p.g. I got 15.5. All this despite a rugged gasdrinking driving schedule, and an engine with less than 800 miles on it.

Easy servicing will be a strong point of these new engines. The gas-station

attendant mentioned earlier, after he recovered from his confusion, agreed.

The spark plugs caught his eye because they're right on top of the engine. "Man, those sure will be easy to change!" said the service-station man enthusiastically—doubtless remembering wrists burned by hot exhaust manifolds on typical V-8s. Cooler operation, because they're well away from exhaust heat, won't hurt plug life, either.

The fuel pump is conveniently located at top right of the engine front cover. Starting motor, oil filler cap and dipstick and generator are on the right. Distributor and coil are mounted at top rear between the cylinder banks.

Valve tappets can be removed through an opening in the cylinder head without removing the head, a real time-saver.

Not so apparent are features that, prolonged dynamometer testing indicates, will give the new engines as much as three to four times the durability of existing engines:

Blocks and heads are fine-grain

nickel-chromium alloy iron. Blocks have deep three-inch skirts for reinforcement,

- All are over-square, have bigger bore than stroke for reduced friction.
- Crankshafts are heavy, rugged. The 401 V-6 shaft, for example, weighs 110 lb. vs. 63 lb. for a comparable V-8 shaft. V-6s have four main bearings; the V-12, seven.
- Lubrication is excellent; rotor-type oil pumps supply more oil at greater pressure than ordinary gear-type pumps.
- Areas of high stress have oversized sections to minimize flexing. Generous fillets and web reinforcements add strength and rigidity to moving parts.

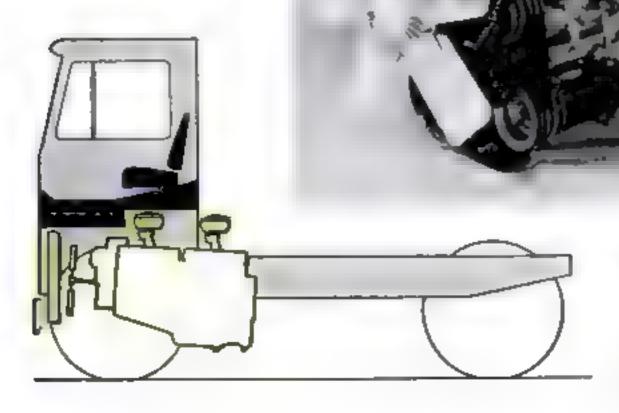
 Careful attenion to engine cooling eliminates wear-producing hot spots.

This last factor is particularly important in producing long-lived engines. Two to three times more coolant flows through the new power plants than in engines of previous design. Bores are surrounded by wide water channels for their full height. To overcome short life ex-

[Continued on page 266]

Whopping V-12 will give the big babies plenty of hill power

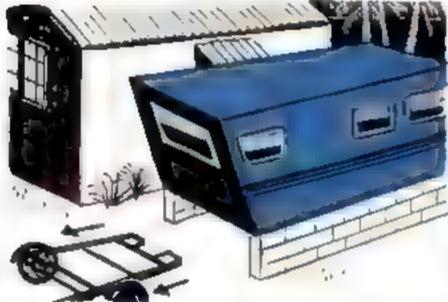
two carsurerors, synchronized so throttle openings match, and mounted on separate manifolds, are used on V-12. Each has its own hydraulically actuated governor. Crankcase ventilation is boosted by manifold vacuum.



neatly under seat of exceptionally short cab. General Motors considers its new family of engines the first major progress in U. S. truck-entine design in more than 20 years.

"I'd like to see them make





A DOUBLE-USE TRAILER. In winter, you'd park it over a foundation, slide out the chassis and pull out a weatherproof scal from trailer to house door .- A. Dorman, Everett, Wash.



A FLEXIBLE TROUBLE LAMP. A magnetic baseplate would conveniently cling to any part of the car to shed light without glare on the job at band.—Chas. Omartoucheski, Linden, N.J.



A BATHTUB with its drain at the end opposite the faucets. With the water running the length of the tub, it would be simpler to clean and ruse it .- John Cronn, North Platte, Nebr.



CAMOUFLAGED COOKIE BOXES, Labeled "macaroni" or "dried beans," maybe the goodies would stay around long enough for Pop to get a hand in the box.-James Martin, East Orange, N. J.



VACUUM-PACKED SAFETY MATCHES, Packed in the can head down, with a striking surface inside the lid, matches would remain safe, dry and rodentproof.-Ray Shoberg, Milwaukee.

Everyone has his own pet idea of a gadget that he would like to see in general use. The five ideas illustrated above were suggested by Portion Science tenders. What a years? We will pay \$5 for each one published. Please use Government posteards only Write name and address clearly. Contributions cannot be acknowledged or returned

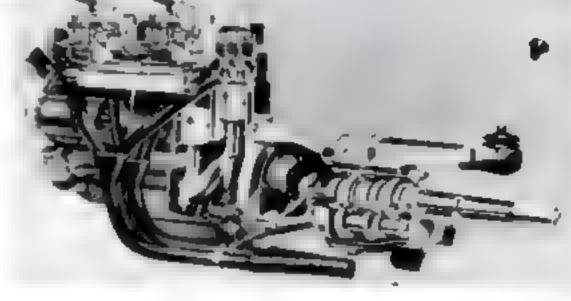
PS Picture News



SUNBEAM ALPINE.

This little convertible is specially designed by British Rootes for sale in the United States beginning next month. It is said to combine performance features of continental sports cars with Detroit-type comforts and refinements, These include a wraparound windshield, large bucket seats, a folding seat in back, extra

luggage space, disk brakes and either disk or wire wheels. The four-cylinder, aluminum-head engine is shown at right with its gearbox. It develops 83.5 hp. at



5,300 r.p.m. The little car is $155\frac{1}{4}$ inches long on an 86-inch wheelbase. It is $60\frac{1}{2}$ inches wide, $51\frac{1}{2}$ inches high and rides $5\frac{1}{6}$ inches off the road.



PROPELLER TRAIN. Here's a new kind of train. Its locomotive is driven by a turboprop, like an airplane. Curtiss-Wright designed it as a three-car unit to carry 276 passengers and reduce time on runs of 300 miles or longer. Engineers say it would cut 10 hours from Chicago to Los Angeles. A working scale model will be shown soon at fairs in Europe.

New Ideas from the Inventors



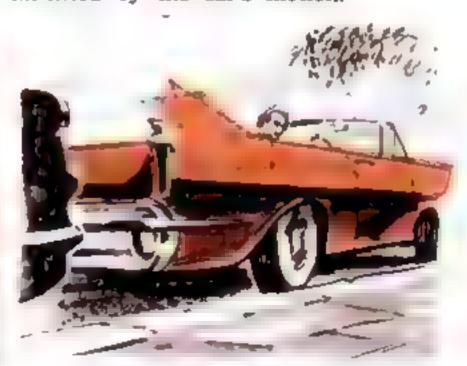
Slide Seat Delivers the Mail. Tracked for a side-to-side movement, the single car seat in this recent patent would let a mailman reach right-side boxes by sliding

-instead of wriggling-the width of his car. To move right he'd release a catch that would normally lock the seat in driving position, to prevent accidental sliding.

Key Lights Keyhole. Touching any metal on this latch with your hand or key would complete a high-resistance electrical path to ground, allow a tiny-and completely safe—current to flow through a neon glow lamp. The light would eliminate any keyhole fumbling.

Retractable Fins Ease Parking, For those who want the speedy, stylish look of high tail fins, but find they sometimes interfere with the back-up view, these up-or-down fins might be the answer. They could be operated by a motor or air-lifted by the car's motion.









Saw Guide Limits Cut. You could make accurate, uniform-depth kerfs for grooves and dadoes with an ordinary handsaw if you had an adjustable stop like this clamped to the blade. The depth gauge would fit any saw, could be quickly demounted for long-stroke sawing

Tree Shaker Speeds Fruit Harvesting. Nudged by a tree-trunk vibrator, ripe fruit would fall free of foliage and branches to make harvesting easier and Tray Levels with You. By holding the tray level on your lap, a new adjustable base could make it easier for you to balance a buffet meal and keep liquid from spilling over the rim of a cup or glass. The base could be set for any lap angle, would fold flat for stacking.

more efficient. You'd mount the shaker on a hollow tractor boom and the airdriven piston that delivers its punch would be controlled by magnetic valves.



More Inventors' Ideas



Furniture Stop Protects Walls. Stains on the paint or wallpaper that result if furniture gets shoved—or simply inches its way—against a wall might be prevented by an adjustable foot like this. The stop could be raised for cleaning or swung underneath and out of sight.

Knife Sizes Cake Slices. With this two-bladed cutter you could easily serve up a uniform, crumble-proof cake wedge every time and transfer it to a plate without toppling the slice or disfiguring the icing. The separating angle between the two saw-edged blades would be adjustable for large or small slices of cake, pie or other soft foods.





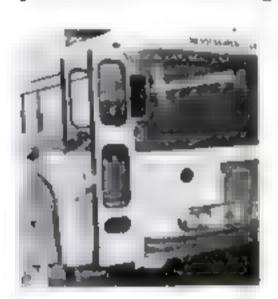
Gun Light Illumines Target. A guard or a sentry could sight his target as quickly as he could light it, with two converging-beam flashlights bracketed to the barrel of his revolver or rifle. The lights would straddle—but not obscure—the sights, and the combination would keep light and weapon equally handy.

The following patents have been usued on their inventions. Car seat to 2 8.8 6.7 to R. Kinuse, Continuesce, R. C., Latele to I '67,103 to 1 Rommer and C. Monin Augusta Falls, A.F. Fime to 2 8.4.066 to I. Funk Indianapours; Saw guide to 2 66 5.0 to R. Akers, Fortsmooth, Ohio, Tray base to 2 8.7.0 to R. Malmer, Blue Island, Ul.; Tree shaker to 2 764,248 to J. Jones, Portland Ore, 3 Stop to 2 764,248 to R. Lindgren, Minneapours, Kulfe to 2 4 0.012 to 6 to Bisen, Jetsey City, Gun Light No. 2,664,895 to I. Board Matter, Pr.

Copies of patents may be ordered, by number, from the Commissioner of Patents, I ashington 25. BC, at 25 cents each To utile to an incentor if the address given above to insufficient, you may address him (by name and patent num-

ber) in care of the Commissioner of Potents.

SCHOOL BUS. This one takes the classroom to students, not students to classes. It provides driver-training practice for schools



too small to afford dual-control cars or other expensive equipment. Driving situations are shown on a movie screen at one end of the bus while student reactions in "cars" on the aisle are checked by the instructor. He also drives the bus

PS Picture News

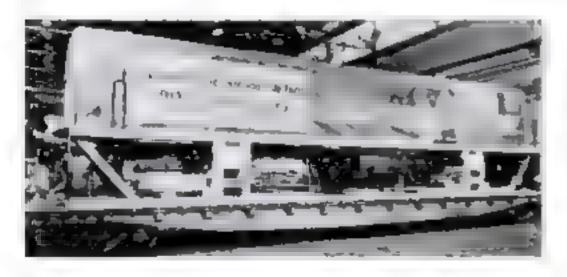


ROBOT POST OFFICE. In the booth above are coin machines for buying stamps, money orders in certain denominations, a phone and a change maker. It's being installed in some French resorts.



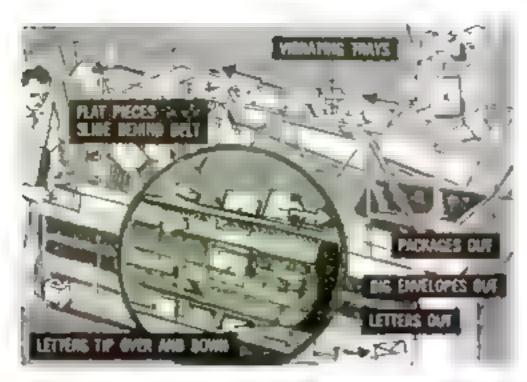
AQUA BOBBER. Here's something new in water sports, from a Maumee, Ohio, maker. The fiberglass ball is weighted to stay mostly upright. But a rider in the crow's nest can swing it in an arc that sometimes ends in a splash.



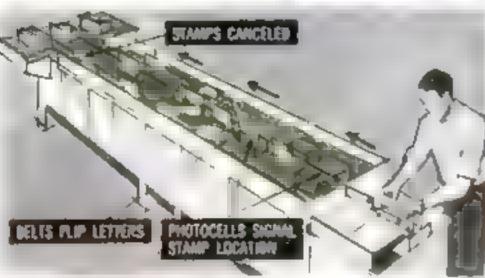


BIG PACKAGE. Now they're wrapping locomotives in plastic bags. The huge covering on the diesel at left is expected to keep it looking like new when delivered to its purchasers in Brazil. It was made by Canton Containers, Inc., to prevent damage from salt spray during the trip from the U.S. makers.

Mechanical Post Office

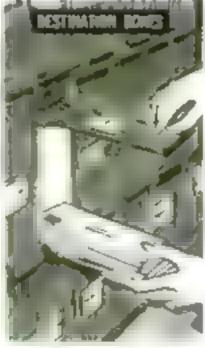


CULLING MACHINE picks ordinary letters out of raw mail, rejecting 'flats" (big envelopes). rolls" (rolled-up papers) and packages It works like a sieve. Raw mail is spread out by vibrating trays, then shd down sloping panels. Tiers of conveyor belts run along slope, spaced out from panel to pick off big pieces and let only smaller letters slip by to bottom conveyor.



letters to get them into orderly stacks, with addresses and stamps all lined up. Electric eyes control the flipping by looking for the stamp (which reflects less light than the envelope t and routing envelope to conveyor that will flip it in desired direction,





SORTING MACHINE distributes letters alarmy 300 destination hoves Operator ready address and punches corresponding code as letter goes past into carrier on belt. Machine computes time required for that carrier to reach destination box indicated by code. When time is up. destination boy triggers nearest carrier and gets its letter. Clerks empty boxes when they re full.



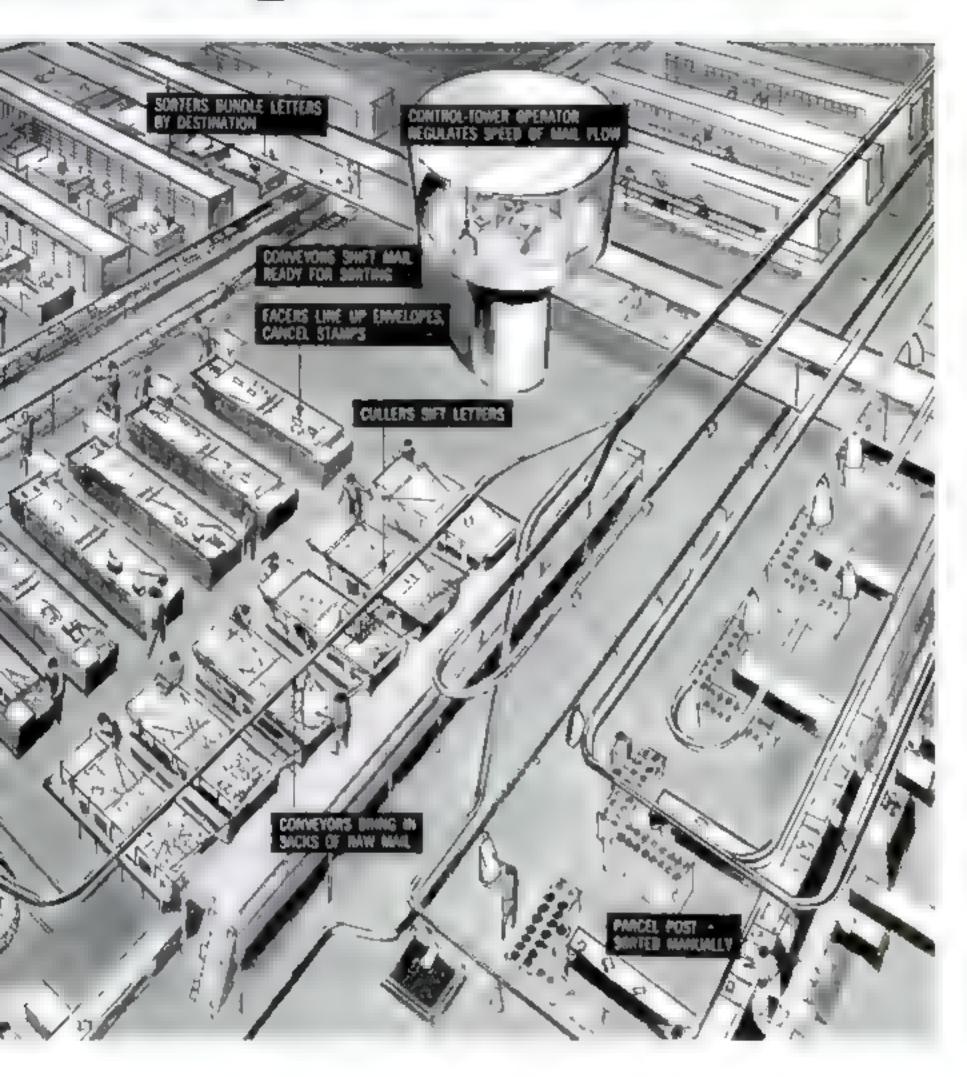
AlL it today, delivery tomorrow Such jet-age service is coming closer as uncannily intelligent machines take over the handling of your letters and packages—now up to 60 billion a year and increasing another two billion every year

These machines will "cull" the mail, separating letters and packages, then "face" the letters—flip them around so

that the addresses are right side up—cancel the stamps, and sort them according to destination. Today this processing is done almost entirely by hand, not much different from Ben Franklin's day—and not much faster, either. Eliminating these antiquated methods is also expected to help put the Post Office on a self-supporting basis.

A big new sorting machine, Belgian-

Will Speed the Mail



built, has already been installed in the Washington office. But the showpiece of postal automation will be a brand-new plant (shown in drawing above) now being built by International Telephone and Telegraph in Providence. Near airport, railroads and highways, it will use a battery of machines to rush mail through.

The Post Office will spend \$15,000,000 researching better schemes this year, in-

cluding \$439,000 for a machine that can read typewritten addresses electronically. Farther off are phosphorescent or magnetic codes (such as the one soon to be used on bank checks) that machines could read easily. Eventually the Post Office might do away with old-fashioned letters entirely, transmitting mail electronically by teletypewriter or facsimile. They're looking into it.



STRAIGHT UP AND OVER. Here's the first flight of the Army's much-talkedabout Doak. With ducted props rotating on its wing tips in a horizontal plane (left), the unusual aircraft takes off vertically like a helicopter. The pilot then swivels the fans to the front and goes into high-speed



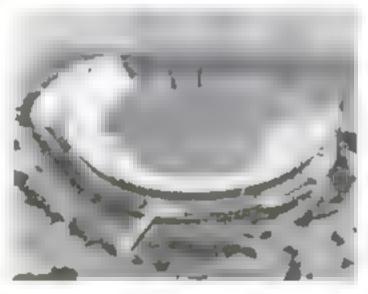
wheel mats. The gadgets being towed behind the rear bumper of the car at left helped to get it out of the mudhole in the foreground. Made in Britain of expanded metal, they are slipped just ahead of the driving wheels of a car stuck in mud, wet grass or snow. The chains drag them along behind until a stop is made on firm ground.



100

HOT SEAT FOR GIANT FANS. When the Giants open their new baseball stadium (shown in model below) in San Francisco's Candlestick Park this month, fans will be warmed by their

seats in the cool night air. Workmen at left install pipes that will circulate hot water under 20,000 seats in the reserved section to provide radiant heat More than



35,000 feet of ³/₄-inch wrought-iron pipe form a warm grille on 18- and 48-inch centers below the precast concrete. The system has its own boiler. The stadium will also be used for football this fall.

106 POPULAR SCIENCE SEPTEMBER 1959

PS Picture News



forward flight like a conventional airplane (above). Vertical landing is accomplished by reversing the process. By manipulating the props, the Doak can be slowed down to stationary hovering at 3,000 to 6,000 feet. It turns and backs on the ground like an automobile,

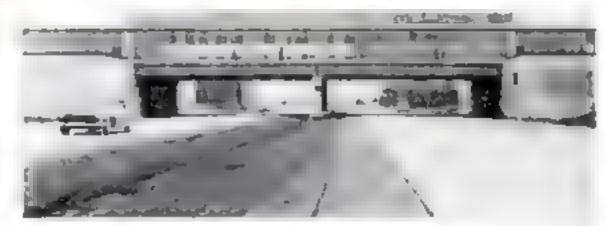
open pop. With doors swung wide, powerful engines on the Convair 880 jet airliner are easy to reach and service. Separate doors on the pylons suspending the engines provide access to fuel lines, hydraulic and electric conduits. The airliner is powered by four CJ-805-3 jets, GE's commercial version of its J79, each with a thrust of 11,200 pounds.





atomic Light. A switch lamp (left) installed by the Pennsylvania Railroad at Altoona, Pa., is expected to last 10 years without attention. Its bulb contains radioactive krypton, giving off beta particles that glow as they hit a zinc sulphide phosphor coating.

ROADHOUSE. Diners in the restaurant at right can relax as they watch the cars go by. The building straddles the Tri-State Toll-way near Lake Forest, Itl., has entrances from both lanes. It's in a sealed-glass enclosure that keeps out road heat and noises.





HINK of a stopwatch and chances parts made of an alloy that's nonmagare you think of a boxing match, a race, a football game, But industrial time-study experts-not sports officials—use most of these little tickers.

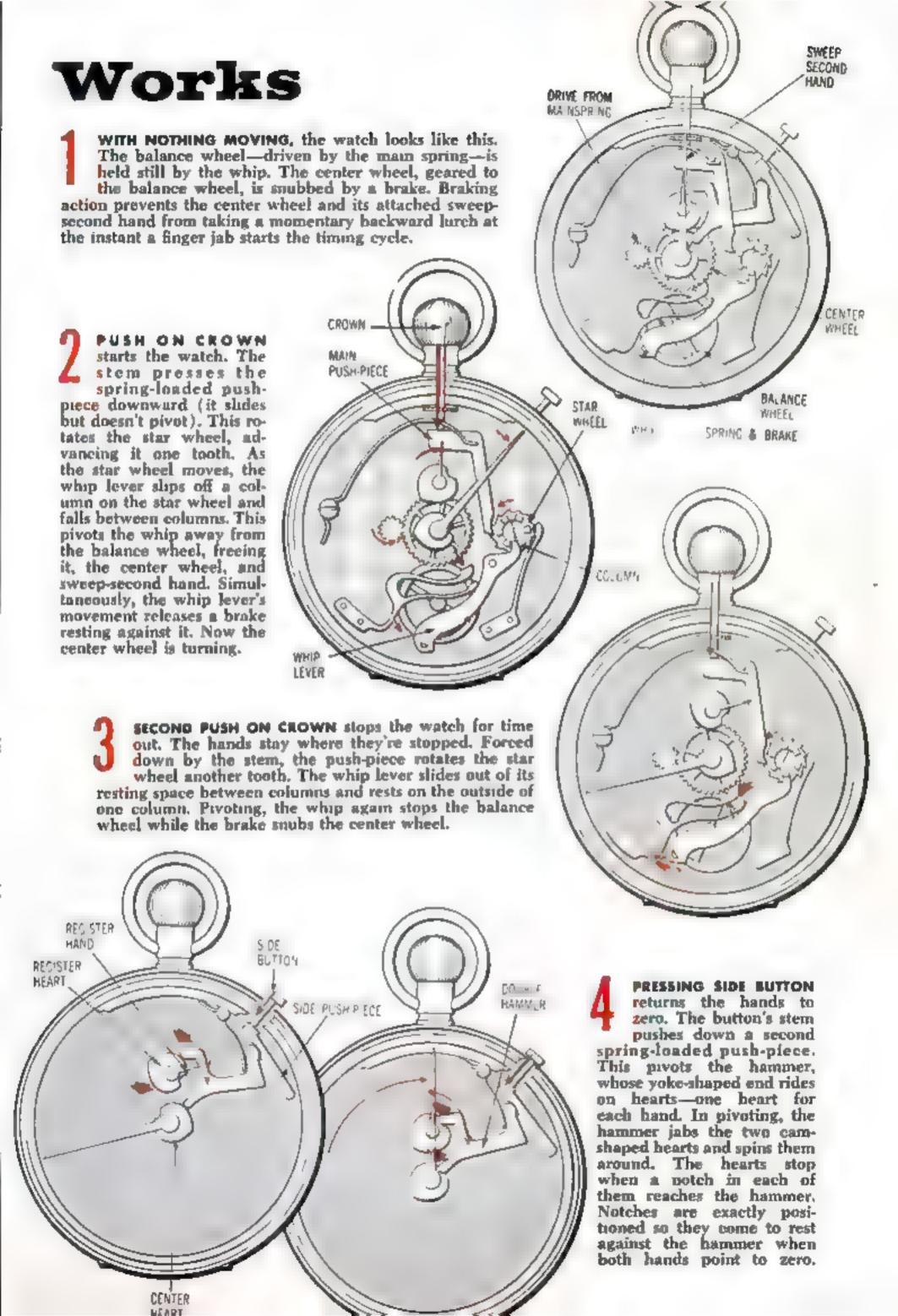
The average stopwatch (typified here by a Swiss Heuer) has seven jewels. Its balance wheel oscillates five times a second when at work, Fancy timers may run for hours with the balance wheel alternating direction 100 times a second.

A good stopwatch has rate-regulating

netic and unaffected by temperature.

It compensates for position, timing accurately whether it is vertical, horizontal or at an angle. To get a U. S. Bureau of Standards rating, it must deviate no more than six seconds in six hours.

A stopwatch should be wound before each use. Its worst enemies are dirt, dust and chemical vapors that infiltrate the case. Perfume vapor is especially badit dries up the lubricating oil.



The Outfit Where



He can hardly walk, but he's ready to jump—300 pounds of man and gear. The extra-equipment bag covering him from the waist down releases automatically as he hits the ground.

HEY call themselves the Screaming Eagles, They're the combat-alert spearhead of the new Strategic Army Corps (STRAC). The parachute is their best friend.

Hercules C-130, Jast new Air Force

In the 101st Airborne Division everybody jumps: the generals, the cooks and chaplains—even the paymaster who hands out extra paratrooper paychecks to the men making their first jump.

As an observer during a recent



Plane loading lists are made up on an Addressograph. Each man carries his own plate with name, serial number and unit

Everybody Jumps



turboprop, carries 64 paratroopers

battle-group maneuver at the Fort Campbell, Ky., home of the 101st, I learned that the life of a paratrooper is a tough one—aside from the actual jump. The training of a combat soldier must prepare him for every situation,

Most of the men, all volunteers, like to jump. Almost all admit they're scared at the moment of stepping out into the void from a speeding Air Force plane.—Herbert O. Johansen.



Men and equipment float lessurely down in a mixed drop. Each man wears an emergency chest chute to pull if pack chute fails.





As he touches ground (top photo) trooper tumbles in good form, gets up to collapse chute, stumbles and is dragged as a buddy grabs for the shrouds. Free of chute, he struggles out of gear

"Recondos" (reconnaissance commandos, doughboy) are elite of airborne unit. They can handle poisonous snakes, put an alligator to sleep by rubbing its belly

When the jump is over



Mobile communications center is vital to fast-changing paratrooper operations. This air-droppable van handles telephone, teletypewriter (wire and wireless), voice and code radio, with a range of more than 1,500 miles.

At Hellcat Trail, patrol leader uses a new helmet radio to pass deployment orders on to his men. Transistorized, it has a normal range of 500 yards, sometimes reaches four miles. There is a 12-channel choice.

Poncho package waterproofs clothing and weapons, serves as raft for men crossing a river.

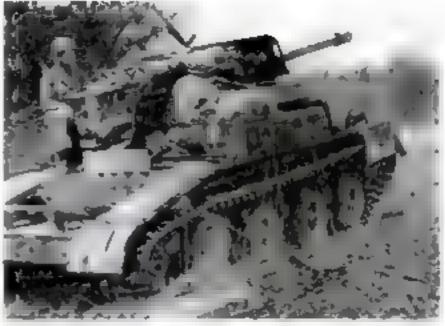




the paratrooper becomes a combat soldier



Bazooka team digs in fast to guard a road against enemy infiltration.



Up to nine chutes are used to drop heaty stuff like M-56 antitank weapon.



Free fall—when a gust prematurely triggered the automatic chute release—junked this Jeep.

Karate (an offensive judo), cliff climbing and star navigation are other Recondo specialties.

Field shelter can save a man's tife Poncho over brancha ork makes snug bed Maj Lewis Millet (right), one of Army's toughest, is a Medal of Honor holder.







4 POPULAR SCIENCE SEPTEMBER 1939

New Rustproof Paints Come in Spray Cans

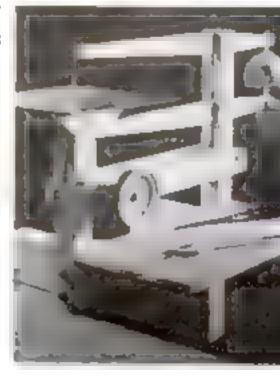
To make it easier and faster to get rustinhibiting paint into hard-to-brush spots, you can now buy Rust-Oleum in pushbutton spray cans. Two other new finishes are Galvinoleum, made to prevent flaking of galvanized metal such as gutters, and a clear rustproofer for car chrome and other brightwork. Rust-Oleum Corp., 2799 Oakton St., Evanston, Ill.



SPRING HOLDS TRUNK LID. This spring-tensioned tie-down hooks to your bumper to hold a trunk lid anug when you lug oversize loads. About \$1, Ohio Products Co., Box 1, North Madison, Ohio,

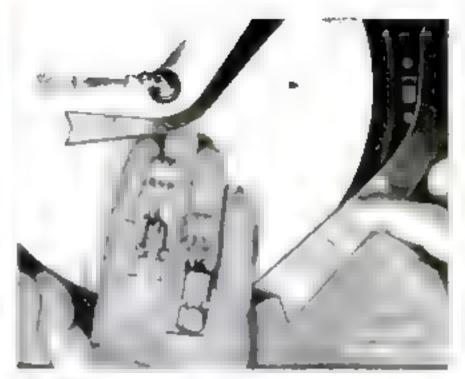
JIGSAW KIT of precut hardwood parts can be assembled with only a screwdriver and wrench. The blade, with a 15½"-capacity throat, is stretched taut between two bronze-bushed rocker arms.

A ½-hp, motor can be boited to the platform to power the tool. About \$15, Henlon Corp., Vestal, N.Y.

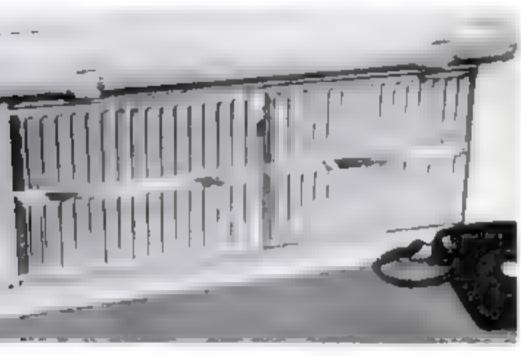




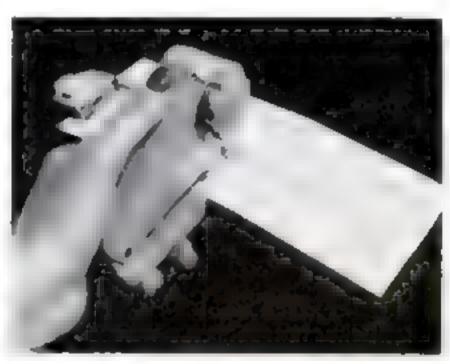
TINY OXYGEN TANK can be carried by heart and respiratory patients for emergency relief. Oxygen comes in replaceable cartridges. Wilmar Pharmaceuticals, Box 10264, New Orleans, La.



QUICK-SWITCH HI-FI. Two pickups prewired to snap-in holders let you switch quickly from mono to stereo records with this new changer. Glaser-Steers, 8 Main St., Belleville, N. J.



POLLEN-PROOF SCREEN, made of foam plastic, is said to filter out 79 percent of dust and pollen. It telescopes to fit stock window widths. About S4, Safeguard Corp., Lansdale, Pa.



MIDGET CHECK WRITER stamps erasure-proof checks like big office machines, yet fits in a pocket. Made for homes and small businesses, it's \$10. Enraco, 913 Forest Ave., Evanston, Ill



ITALK STOPPER at left warns a long-winded speaker with an amber light when there's one minute to go, a red light when time's up, then a loud buzz. All-gaier Shops, Arlington, Va.

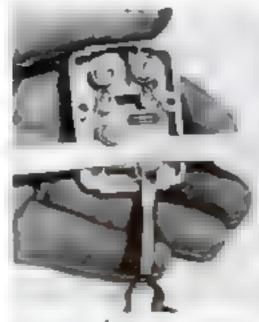
right is a flexible neoprene ring that slips over a paint-brush for overhead jobs. Sizes for 2½" to 4" brushes: Whiz No-Drip Co., Box 331, Blytheville, Ark.



115

TV Sets Plug in Anywhere

Portable TV sets can be really portable with new plug-in antenna outlets that you can mount in any room or out on a patio. An amplifier boosts signal strength so you can run several TV sets or FM radios at the same time from one antenna. A kit including plugs, outlets and amplifier costs \$67.75, Jerrold Electronics Corp., 15th St. and Lehigh Ave., Philadelphia.



OUTLETS clamp to antenna lead-in with screws that bite through the insulation, making contact without requiring any wiring.

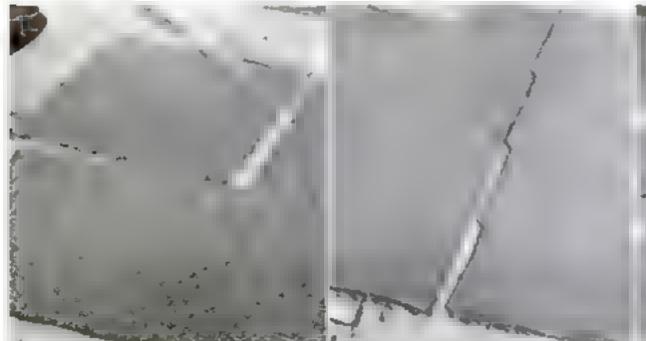


PLUGS, quickly attached to TV sets, fit into wall outlets. Outlets can be surface-mounted or concealed in wall boxes.



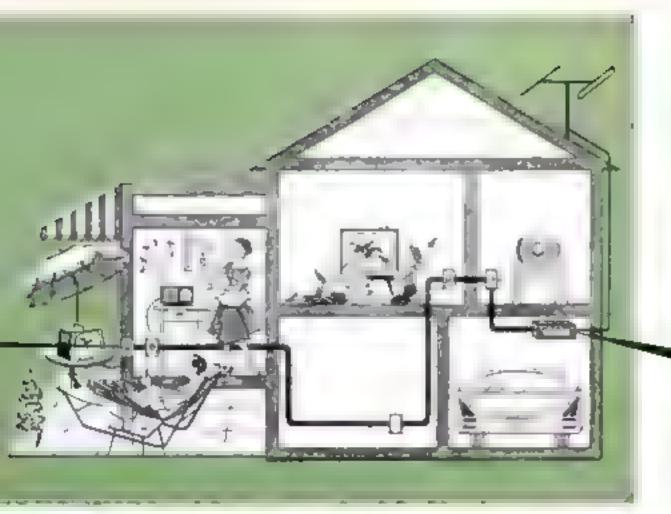
SAW FILER is said to let you sharpen circular blades at a fraction of the usual cost. A file is held in a wood base that slides in a track bolted to your miter gauge. By adjusting the miter angle and sliding the jig, you can file face and back bevels on rip, crosscut and planer blades. About \$6, Martin Saw Filer, 539 Greenleaf Dr., Monroeville, Pa.

NEW CARPET SQUARES can be shifted around as they wear or to change colors. The 18" squares have interlocking backs of hardboard (center) that can be laid over any surface, even concrete. For added touches, inserts of ceramic or vinyl tile can be fitted in (at right). They come in standard or custom colors for \$8 up per sq. yd. Jaystron Corp., 1760 E. Market St., Akron, Ohio,





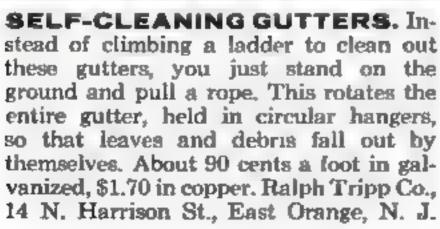
IS POPULAR SCIENCE SEPTEMBER 1959





AMPLIFIER, hidden in garage or attic, magnifies antenna signal so it can handle many sets at once. It's also said to improve reception in areas where signals are weak,







HORN STOPPER. If your car horn sticks or shorted wires start a fire, you can quickly disconnect your battery by unscrewing these knobs. The knobs screw into threaded spiders forced over the terminals and are held in oil-filled cups to prevent corrosion. They're about \$4 a pair from Terminals, 22700 Martha St., Woodland Hills, Cal.



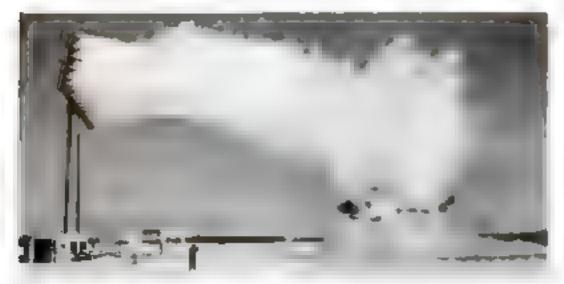
"You just punch buttons and hang on for dear life."

The 70-ton Le Tourneau scraper has an all-electric drive. Pressing a button, the driver revs up the 600-hp. Cummins diesel that powers one AC and one DC generator. Another button starts the 75-foot-long giant lumbering up a hill as steep as 45 degrees. All eight wheels

move aimultaneously, each powered by its own DC motor.

"It's like having eight bulldozers working for you," a construction boss says. "There's practically no terrain too rough for these babies; they don't need any assists from pusher dozers, either, as some of the big ones do."

The driver steers by means of an AC motor on the front of the second unit This motor drives a gear in mesh with a



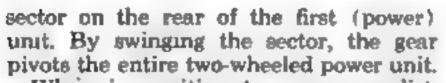
an artificial blizzard, a Bell helicopter tests its rotor decicing equipment. Icy blast is spewed by 143 spray nozzles mounted on a 50-foot tower that can be rotated to line up with wind direction. The spray rig, a Canadian government installation, atomizes water with steam; cold weather does the rest.

118 POPULAR SCIENCE SEPTEMBER 1959



PUSHBUTTONS control the diesel, two generators, working parts of both digger units and lights. Turning the big knob (center) varies wheel speed. Flicking a switch changes direction—there's no steering wheel.

A STRFY DC MOTOR like this powers each of the scraper's eight wheels. Individual drive on each wheel eliminates clutch and differentials. The huge tires measure six feet in diameter.



When in position to scoop up dirt, the driver punches control buttons to run motors on the two digger units. The apron on the front of each unit rises out of the way and a scraper blade dips below ground level. Maximum bite is about 18 inches; the rear-unit blade, of course, is set deeper than the front one.



priver rices atop power unit. Toothed semicircle at rear of power unit is steering sector driven by a gear on the second unit. Above sector is one of the generators.



Driving forward with power on all eight wheels, the earthmover slices into the hill. Dirt, up to 55 tons of it, fills the diggers. Motors then raise the blades, lower the aprons. While crawling over the dumping site, aprons are again raised. Now the tailgate on each digger moves forward. Shoved like a ram, it pushes the dirt out the front onto the ground.

There are five of these \$135,000 mountain movers at work in the U.S.

RESEARCH HYDRO. New marine materials are being tested in an unrestricted-class hydroplane built by industrialist-sportsman Robert Evans of Detroit. The hull panels are unsinkable sandwiches of mahogany, epoxy-glued to an expanded, plastic-foam core. Twin props are powered by two 12-cylinder 1,800-hp. engines.



TURBOFAN ENGINES: Less Noise, More Push for Jets



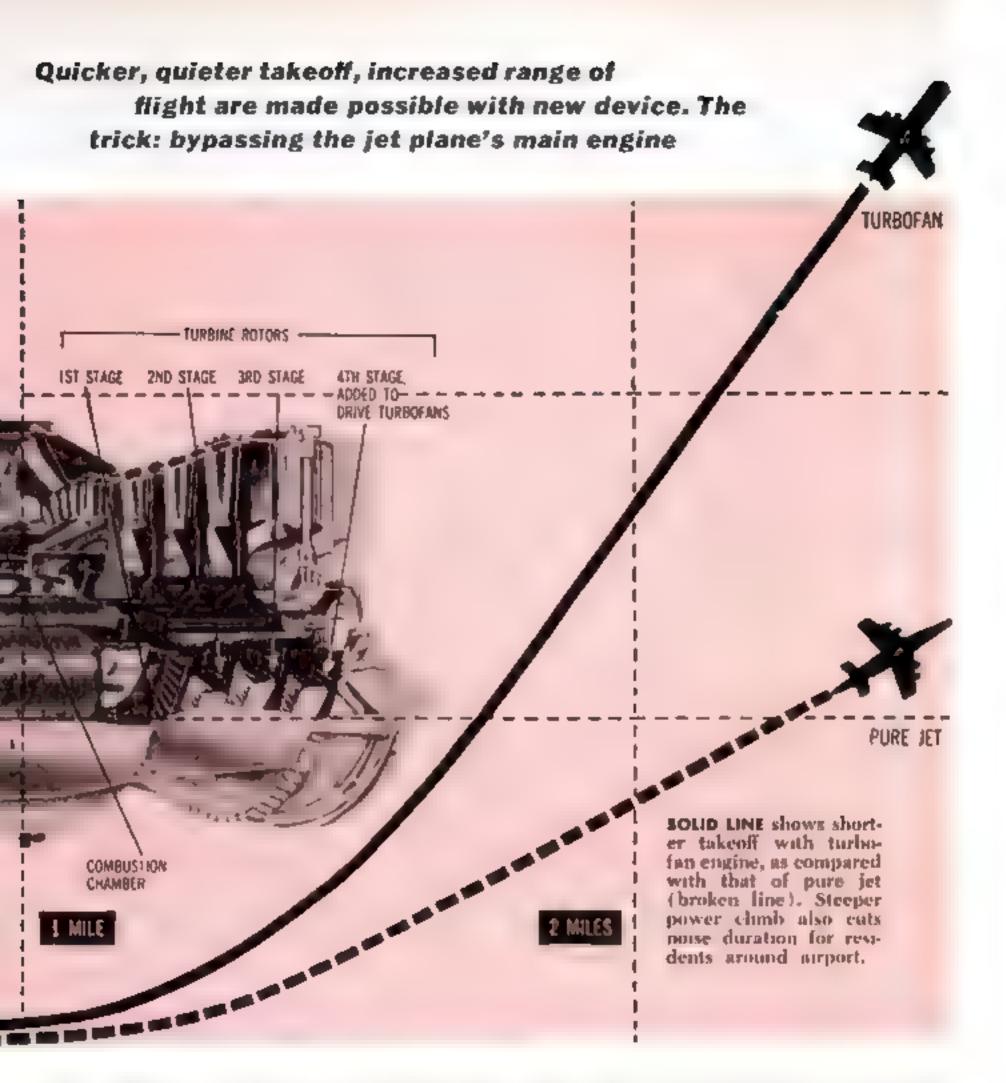
By Herbert O. Johansen

HE turbofan is a device almost as simple as the exhaust fan in your kitchen. It will increase the range of subsonic military and commercial jet planes by several hundred miles, and enable them to take off from shorter runways with less noise.

Using a series of oversize blades that gulp vast quantities of air, the turbofan, hitchhiking on a straight jet engine, acts somewhat like the propellers on conventional planes. The development is hailed by its advocates as comparable in importance to the supercharger in piston-engune progress.

First application probably will be on a new version of the eight-engine B-52 jet bomber, extending its range by as much as 500 miles. Scheduled for this is the Pratt & Whitney forward turbofan arrangement shown in the cutaway at the top of these pages.

Interest being shown by commercial airlines in the forward turbofan, as well as in an aft-fan version developed by General Electric, makes it a good bet

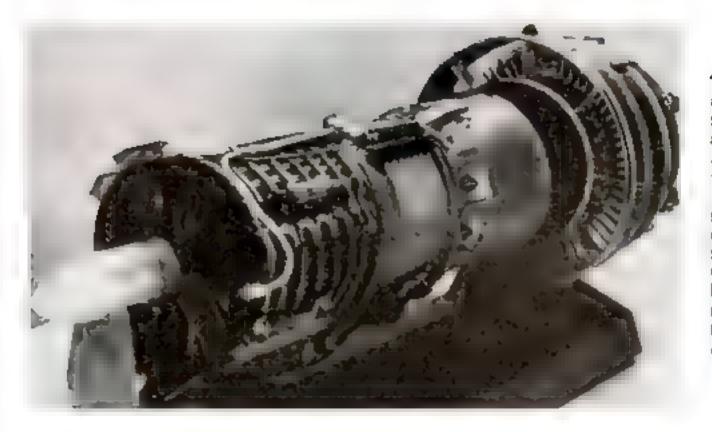


that they'll be powering passenger jets within two years. A British counterpart, the Rolls-Royce Conway bypass engine (ahead of ours in development) has been specified by several airline customers for installation on their U. S.-built jets.

The turbofan is a power booster, not a speed booster. In fact, its limit of usefulness ends at about 95 percent of the speed of sound—which is about as fast as our commercial jet planes will be flying for some years to come.

What appeals to the airlines is that they will get increased performance without engine replacement. The turbofan components can be added to a basic jet engine in an overhaul shop. Although complete turbofan engines will be available from the manufacturers for installation on new planes, both Pratt & Whitney and GE promise conversion kits.

How it works. First let's take a look at what goes on in a pure jet. Air taken in at the front end goes through compressors that build up pressure. The compressed air then enters a combustion chamber where it is mixed with fuel and burned, creating heat (energy). Next the



at rear in this GE version, Principle of operation and advantages are the same as for the forward fan. A free-floating turbine rotor is aerodynamically driven by exhaust gases from the main engine. Outer halves of the turbine wheel "spokes" are fan blades that handle the bypass air. Slower exhaust cuts jet noise.

hot, expanded gases pass through a series of turbines that extract only enough energy to drive the compressors and engine accessories. Most of the gases are exhausted through the tailpipe, where a jet nozzle creates the high-velocity rearward thrust.

At the other extreme is the turboprop.

MAXIMUM ENERGY of combustion is used for high-velocity rearward jet thrust.

AROUT 90 PERCENT of potential jet thrust is converted to shaft hp. to drive prop.

FAN MOVES MASSES of air to give thrust without robbing gas-

Here 90 percent or more of the energy created in the combustion chamber is used to drive a shaft that spins a conventional propeller. What's left goes out the tailpipe as added jet thrust.

The turbofan is in between. The fan blades, whether forward or aft, rob the basic jet engine of only enough energy to drive the fan blades. The huge extra amounts of air they gulp and exhaust bypass the main engine, creating an independent thrust—as much as 50 percent of total engine power developed.

This extra thrust is available almost immediately the engine is started, shortening takeoff runs and giving full power for climb. In one test run on a GE turbofan, acceleration time from idle to full power was less than six seconds. A straight jet achieves its most efficient thrust power at high altitudes and high speeds.

And since this air bypasses the combustion chamber without using fuel, the result is greater range or greater payload capacity

The extra turbine stage that drives the fan blades slows down the velocity of the tail-exhaust gases, lowering noise levels by 10 to 20 percent.

Exhaustive tests, on the ground and in flight, have convinced engineers that they have the solution to the straight jet's shortcomings at subsonic speeds.

Both GE and Pratt & Whitney each have built seven turbofan engines. Next year more elaborate flight-testing will take place: the P&W on the U.S. Air Force's big B-52 bomber; the GE probably on a Convair 600 jet liner

turbine energy.

PS Picture News



CARGO CRUISER. Here's an outsized wagon designed for dealers and salesmen who carry a lot of goods. It's built by Superior Coach Corp., Lima, Ohio, on a special heavy-duty Pontiac chassis with a 148-inch wheelbase—two feet longer than standard—and has 50 percent more carrying capacity. One or two rear seats that fold into the floor are optional.



TOOL-USING ANIMAL. The fun loving California sea ofter, shown above at a leisurely meal, is the only mammal besides man that uses tools. When hungry, the North Pacific native hunts up a small rock, then cracks open clams by banging them against the stone. It rolls over on its back, rests the rock-tool on its stomach, and dines with the indolence of a Roman emperor Fact is, it is a regal animal, with one of the richest, finest pelts in the world. A single skin sold for a record \$4,000. Once nearly extinct, it is now increasing under strict U.S. protection



Laying on the bat near the wire, charioteers raise a dust cloud. Two men race at a time, using

Chariot Racers Risk Spills for Fun

You need an oil drum, some steel pipe, a couple of nags—and a lot of nerve

HARIOT racing is making a big comeback after 2,000 years—in Boise, Idaho. The arena: a race track on the local fairgrounds. Every Friday night the stands are crowded with fans who cheer their favorites as loudly as ancient Greeks and Romans did.

These modern charioteers have made a few changes in the age-old sport, however. Only two chariots race at a time, instead of a dozen or more. This prevents murderous pile-ups.

It doesn't make the races kid stuff, even so. Horses have run away when their chariots tipped over on a curve or locked wheels with a competitor. One driver was hurled end over end when the tongue of his cart broke loose and rammed into the ground. He broke an arm and four ribs.

The modern chariot races are probably faster than the Roman ones were. Total distance is a quarter mile and some of the best horses in the West are used—thoroughbreds and registered quarter-horses as well as fine saddle horses. Chariots seldom weigh over 150 pounds; and they have the added advantages of modern running gear and lubricants.

Drivers build their own chariots from junk parts at an average cost of \$60 to \$75. (Harness runs an equal amount.) The cart is cut from an oil drum, and two-inch steel pipe is welded on the front for a tongue.

Credit for reviving the sport goes to "Ace" Wolverton, president of the 36-man Boise Valley Chariot Racing Association.

—Robert M. Hyatt.





ACCIDENTS DO HAPPEN: After winning the race, this team wheeled suddenly and headed for the Win window, dumping chariot.

teams matched for speed

stands are crowded with spectators who paid a dollar each to watch the quartermile races. Characts are cotdown oil drums with a solid axle and old auto wheels from the lank vard. Wheels are set 50 inches apart





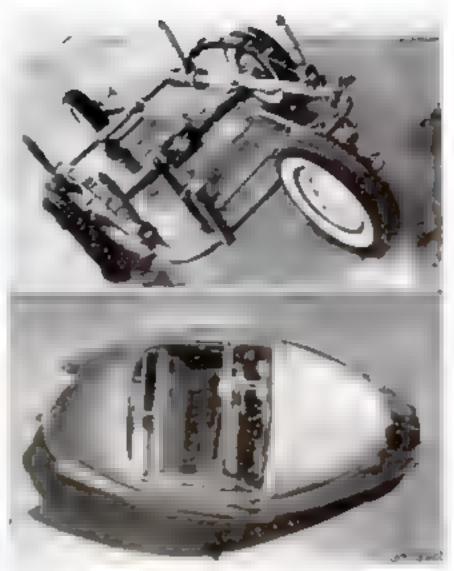


POWERED BY GOATS and driven by a girl, this midget chariot circles the track to provide a bit of comedy between races.

PS Picture News



RAILBIRD. This spraying helicopter follows tracks of the Western Maryland Railroad near Gettysburg, Pa. Used to kill weeds and brush on rights-of-way, it sprays 10 miles in 20 minutes without refill and without interfering with traffic.



DIAMONDBACK. Here's an experimental Yugoslav car that gets 55 m.p.h. from a 14-hp, engine. Wheels in diamond pattern permit a streamlined body; both front and rear wheels steer. The center-hinged chassis takes bumps easily.



NIGHT SIGHT. The spotlight on these German binoculars helps seeing in the dark for power-line trouble shooters, explorers and others. It's powered by a nickel-cadmium battery, has a 200-yard range and beam spread of 50 feet. It has a focusing knob, is set on a ball joint for accurate aiming.



PROP DESIGN. Now they're putting anti-collision paint on propellers. Fluorescent markings were first used on wing-tip tanks of Air Force and FAA planes so they could be seen easily in the air [PS Dec. '58]. Here they form a bright ring on the whirling blades of an F-27—visible to mechanics on the ground,



HAND DIAL. The new telephone above has its dial set in the handpiece. It's also equipped with a built-in night light. The New Jersey Bell Telephone Co. is testing 250 of the sets in homes and offices in New Brunswick, N.J. It has an idea they may be easier to see and use than base-dial phones.



Felled by a London heat wave, this British Guardsman lies toppled over like a toy soldier.

Is It "Chicken" to Faint?

No, say the doctors. And it's happening to more people in today's stress-ridden world

By George J. Barmann

You've heard of brides keeling over in a dead faint at the altar, but it can happen to grooms, too. It happened recently to a 225-pound wrestler in Indianapolis. Though used to pinching off the blood supply of others with a hefty hammerlock in the ring, this fellow suddenly put a half-nelson on his own circulation. The reason, he alleged later, was worry about honeymoon expenses.

Fainting is a lot more common than people think—and growing more so, says Detroit specialist Dr. Edgar E. Poos: "The aging of the population, the stresses and strains of daily living, the anxieties, fears and tensions in the atomic and jet age are probably making these complaints more frequent."

Dr. Poos also thinks fainting may be the hidden cause of a number of car and plane accidents, the kind where pilots or motorists lose control inexplicably. Other experts agree: They rank carelessness and inattention as the major causes of

accidents; then list fainting.

Tension, taboos, or tight collars can all trigger faints

You can conclude from this that fainting is not restricted to females. Men faint, too. Strong men, varsity football players, good soldiers, rugged blood donors, have all been known to collapse.

Technically, physicians define fainting as a sudden temporary loss of consciousness: the result of a shortage of blood and oxygen to the brain. In the old days, a person would say, "the blood drained out of my head."

What triggers it? The causes may be physical or mental. Standing a long time in a hot stuffy room, jumping from a chair or quickly turning your head can



ACCIDENT CAUSE? Many experts think fainting is a "hidden" factor in air and highway tragedies.

make you faint. But so can fright, the sight of blood, anxiety or emotional jolts.

Take the case of the Pittsburgh ambulance driver. He'd watched others faint often enough. Then one night he picked up the phone to hear his kid brother, calling from the Caribbean, say he was going to fight for Fidel Castro. The ambulance man fell over in a swoon.

Then there was the Chicago medical student who fainted in front of an exhibit at the Museum of Science and Industry. What bothered him was a sight he would see often in his work—specimens of the human embryo.

Whatever the causes, fainters typically show the same symptoms: They turn pale. Their hands and foreheads become

cold and damp. A few moments later color and warmth return. They come to.

The paleness means that blood "drains" from the head. The blood vessels deep in the legs and abdomen expand, the result of complex nerve messages. Blood collects in the dilated vessels. The heart sometimes slows down, sometimes gallops; but it beats weakly. It's as if you suddenly enlarged a well pipe and lessened the power of the pump. Blood pressure falls. Not enough oxygen gets to the brain. Unconsciousness follows.

Who blacks out? Physicians say you can't predict. A seasoned crime reporter at an execution in Sing Sing slid quietly from his bench in the death chamber when he heard the hum of the turned-on current

Nor does size matter. "Large persons show just as much tendency to faint as do smaller ones," says Dr. Robert Barnard of Cook County Hospital in Chicago. At blood-bank centers he has studied, seven percent of volunteers fainted before, after or while giving blood.

In these cases, Dr. Barnard believes there may be a kind of blood taboo operating—a feeling that the loss of blood is "forbidden." When we see that taboo violated, we suffer such a powerful psychic disturbance that we faint.

But far less deeply centered psychological disturbances can cause faints:

- Imaginary dangers. In a London theater, a newsreel showed a man supposedly being run through with a sword It was explained that this was a demonstration of Hindu magic, filmed for medical experts. Yet some of those in the audience fainted.
- Hysterical faints. When a woman fainted one day in a Rochester factory, word quickly spread that there was poison gas in the building. Other women promptly fell over. Physicians said that

Here's first-aid treatment for anyone who faints

If you have repeated fainting attacks, you should consult a physician. But you can often fend off an "ordinary" faint by just lying down. Next best precaution: Sit and lower your head below your knees.

Once someone has passed out, treatment

already is underway. Unconsciousness, itself, hastens recovery. By toppling over a victim, Nature puts him in better position for blood trapped in the lower parts of the body to reach the chest and head—it no longer has to go uphill.

But there are ways to help:

 Stretch the person out on his back and elevate his feet.

—then nature takes over

some fainted out of fear, others because of hysteria.

The "hysterical faint" almost always occurs when there is an audience. It's a bid, possibly unconscious, for attention

or sympathy.

A Southern girl whose engagement was broken began having fainting spells —always before family or friends. The spells ended abruptly when the couple patched things up.

 Nervousness. Sometimes extreme nervousness makes people breathe too deeply and too rapidly. Dizziness sets in and they feel they're about to smother. Sometimes they faint from this "hyperventilation."

A 35-year-old history teacher, nervous about a speech he was to make, collapsed in the hotel lobby during an educational conference. The house physician prescribed a homely remedy. He gave him a paper bag to breathe into. This replenished the lost carbon droxide and restored the acid-alkaline balance.

 Extreme happiness. Sudden joy can kick the pins out from under some people. A basketball coach whose team won the state championship, and a brunette beauty who captured the Miss Universe crown, are among those who have fainted from delight.

These faints stemmed from emotional causes. There are "classic" physical

causes, as well:

 The tight collar. Fainting can be caused by pressure on certain parts of the body, particularly the neck. A man with a tight collar may faint when he turns his head to park his car.

 Muscular faints. Standing rigidly at attention for long periods, or standing around after strenuous exercise may flatten the best of men. Blood circulates more vigorously when the veins are being massaged by moving muscles, less so



TWO FIRST-AID TIPS: Apply a cold towel to the head and loosen clothing around the neck.

when the muscles remain entirely idle.

Among the most dramatic examples is that of the busby-hatted British Guards soldier who tumbled over before the

Queen's averted eyes.

 Cold faints. Heat and fainting are commonly associated; but cold, too, may snap the trigger. A 30-year-old Navy veteran fainted five minutes after swimming in icy water. A 26-year-old truck driver collapsed after a long haul in sleet and snow.

None of these physical causes is grounds for much worry. Really serious cases of fainting—from anemia, epilepsy, brain tumors, varicose veins—are comparatively rare. People mistakenly link fainting with heart disease, notes Dr. George Engel of the University of Rochester. Not so, say the doctors. Few

people faint from heart trouble.

Because fainting comes with so little warning and is so quickly ended, few medical authorities are able to observe it from start to finish. But recently a full team of physicians and nurses got their chance. A 36-year-old television commentator was taping a description of an operation—something he'd done a dozen times before. This time he wobbled and struck the floor, "The place was filled with whirling sparks," he recalls, "Then I thought somebody pulled a dark blanket over my head." Doctors revived him and assured him it was nothing.

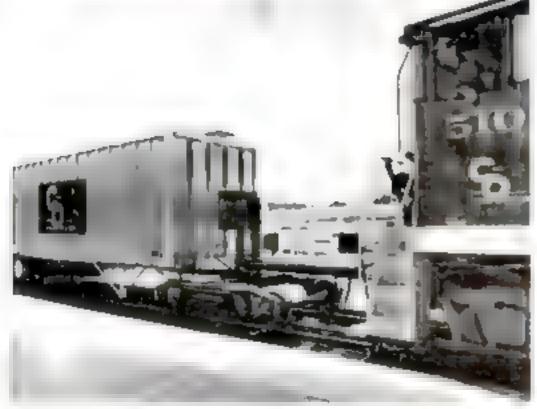
- Loosen his clothing, especially the collar.
- Apply a cold towel or water to the head.
- Use smelling salts, if available.
- Keep him reclining on his back for at least 10 minutes.

And some don'ts:

- Don't force an unconscious person to drink. He might choke.
- Don't force him to sit up. It may prolong the unconsciousness.
- Don't use smelling salts or any stimulants if there is bleeding. They may tend to increase the bleeding.
- Don't allow him to stay on his back if there is vomiting. Roll him over, turn his face to the side, forehead on forearm. He'll breathe easier and be less likely to strangle.

PS Picture News





DUAL BOXCAR. Retractable rubber-tired and flanged wheels make this vehicle suitable for both highway and rail travel. The Chesapeake and Ohio has the Railvan in service on its 172-mile run from Grand Rapids to Traverse City, Mich.—as trailer (top) and boxcar (just above).



huge propeller (left) in the Ford climate chamber at Dearborn, Mich., gives new cars a hurricane tryout. The big 24-foot-diameter blades can create winds up to 140 m.p.h. by blowing 3,000,000 cubic feet of air through the testing chamber every minute.



JOB SPEED-UP. Workmen in Hamburg, Germany, put up this four-story building in 24 hours with prefabricated sections from Denmark. Tenants moved into 48 apartments in nine weeks.



TWO-TON TIRE. Here's the largest tire ever made—10 feet high and four feet wide. Goodyear built it for big earthmovers, prices it at \$14,000. Its rim will weigh another ton.

4 FEEE



Exciting Manual New Split-Level Workbench

THE DAY you buy your first portable power tool something seems to happen to the time-honored workbench. You begin to find it inadequate.

Now you can have a bench designed expressly for portable tools. A split-level

bench developed by POPULAR SCIENCE MONTHLY fills today's shop needs, and yet retains all merits of the traditional bench. It's a brand-new concept—with six major features:

Live storage of portable power saws,



the power-tool compartment provides safe, dry tool storage, well above the dampness level of most basement floors. All your tools are locked away with the turn of a single key (above). Don't underestimate the convenience of having the tools always plugged in and ready for instant use. You just reach for the tool you want, and use it for the job at hand.

drills, sanders—all plugged in ready for use.

 A locked compartment to keep tools safe from children and borrowers.

 A four-foot bench at conventional height for stand-up work.

 A bench nearly three feet wide at a lower level for jobs you do seated.

A pull-out table with many special uses.

· Outboard support for long pieces.

Built with a fresh eye for what a man using modern tools needs in today's home shop, the new bench still has everything necessary for working with conventional hand tools. These are kept handy on a perforated-hardboard backboard at the rear of the main bench. At a height of 34", the upper bench satisfies all normal hand-tool needs.

But why stand when you can sit? The door of the tool compartment hinges down to provide a low-level work surface. Sitting there, you can carry out many electrical jobs and home repairs much more comfortably.

Actually, greater convenience in working with all of the handy portable power tools was the big reason for dropping part of the work area to a lower level.





FULL-SIZE PANELS of plywood or other sheet material are no longer a problem to handle and cut, flow would you make this rip cut on an ordinary old-fashioned workbench?

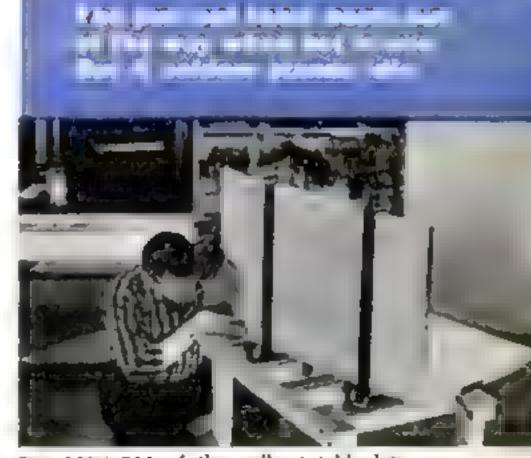
In shop operations today, as often as not you find yourself confronted by large panels of plywood or other sheet material, convenient to buy but awkward to handle and cut up. The split-level work bench overcomes this.

The pull-out table does the trick. You pull out the accessory table, swing the pivoting leg into position under the low-level bench and you're in business. Rest the plywood panel on the table and bench and it's at a convenient height for working with power tools drawn from the storage compartment

Inside cuts over the open-top table are well supported, instead of hanging in mid-air as they would if the panel were straddling two sawhorses. There's less risk of splintering on cut-offs, and a saber-saw blade can cut freely in the spaces between the grid rails.

If you should nick the table top when cutting through a panel, there's no harm

TABLE DOES THE WORK OF TWO SAWHORSES. Note, in the background, the pivoting leg is in the out position, ready to support the swing-out tool-cabinet door.



THE OPEN TOP of the pull-out table lets you place clamps where you want them. No more sliding work to an off-balance position, over the bench-top's edge, to install the clamps.



done. Like a butcher's block, the rails and cross members can be planed smooth after many saw kerfs chew up their top surfaces.

The tool cords also reach from the tool-shelf outlets to the far end of the high-level bench if you want to work there. Extra cord lengths aren't in the way; they tuck behind the slanting tool board. Three-wire circuitry keeps all electric tools grounded.

It's a gluing table, too. The little table was patterned after the old-time cabinet-maker's gluing table. The open top provides free use of clamps without interference and without hanging the work over the edge. The table also makes an effective broad-topped sawhorse, and it's low enough to hold a board with your knee while you handsaw in true carpenter's style.

Even the drawer has a new idea. It has a perforated-hardboard bottom that clears itself of the sawdust and small chips that find their way into a bench drawer. Each time you open and close the drawer, the dust is agitated and falls through the perforations.

Construction of the bench is as modern as its design. Instead of the usual bench top, made by edge-butting two-by-sixes together and tediously planing them smooth, both levels of the split-level bench are made of \(^4\)" plywood covered with a replaceable work surface of \(^1\)/4"

tempered hardboard. The high-level bench top is actually two layers of 3/4" plywood glued and acrewed together to gain the solidity needed in a woodworker's bench. You'll find it's got that armorplate rigidity so desirable when you're working with chisels and gouges.

The bench top overhangs the sturdy frame 2" along the front edge for clamping work to the bench, and 12" at the left side to allow room for the vise. (Note how the left legs are staggered at front and rear.) The low-level bench protrudes 3" further out than the higher level, to support long work held in the vise.

Maximum strength and rigidity are built in with a minimum of materials. All the plywood you need can be cut from two 4'-by-8' panels. Skin strength of the perforated tool board holds the bench frame square and prevents sidesway without the use of diagonal bracing. The lower storage shelf with its three sides also adds to the overall rigidity. There's no need to lag-screw it to the walls to make it stand firm.

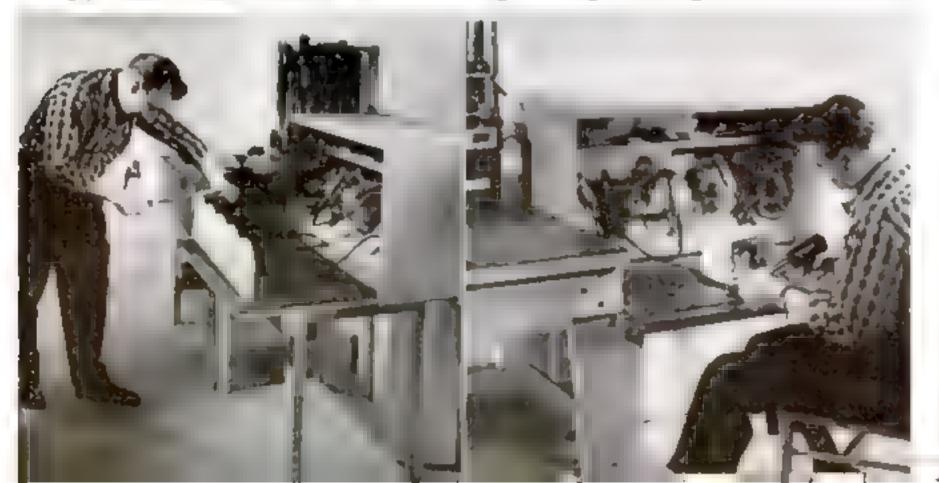
The plywood tool cabinet is permanently fastened to the side of the main bench. An adjustable leg at the rear of its outer end can be moved up or down and locked to conform to an uneven floor.

A final tip: If you already own a good conventional bench, consider building the tool cabinet and pull-out table only. You'll then be right up-to-date.

Split-level isn't just a catch-phrase; it's practical

THE LOW-LIVEL WORK SURFACE is useful even when not actually being used. Here its protruding edge conveniently supports the end of a long job held in the workbench vise.

TINKER IN COMFORT seated at the low-level beach. An outlet in the right side of the main beach is convenient for such things as soldering or using a hand grinder on small work.







Child-Size Rod for Clothes Closet

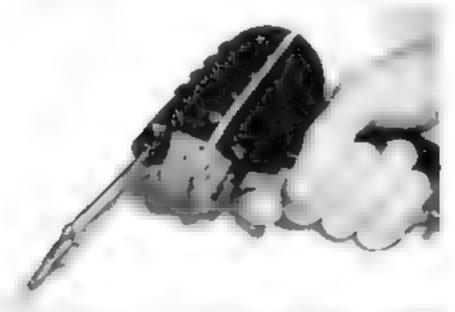
HERE'S a clothes-rod adapter you can make so that small children can hang their clothing in a closet without trouble. It is attached to the regular rod by screwed blocks that are easy to install and can be removed without damage to the original rod when the children grow up

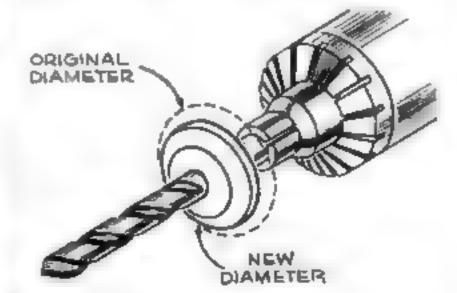
Drill side braces for a snug fit on the upper rod. Then saw out a corner through each hole. Fit the pieces to the rod and screw the cutouts back—D. E. Roetman, Dayton, Ohio.

PPREMNANTS of soap bars in the feet of two nylon stockings make a handy soap bag for use in the shop. Pull one stocking over the other and close with a knot. The nylon takes grease off your hands easily.

—W. F. Biles, St. Petersburg, Fla.

▶▶▶WHEN my husband tried to rid our yard of poison ivy last year, he got a severe case right through his gloves. This year he covered his hands and shoes with plastic vegetable bags. Result: no itching. —Mrs. Monty Koslover, Reading, Mass.





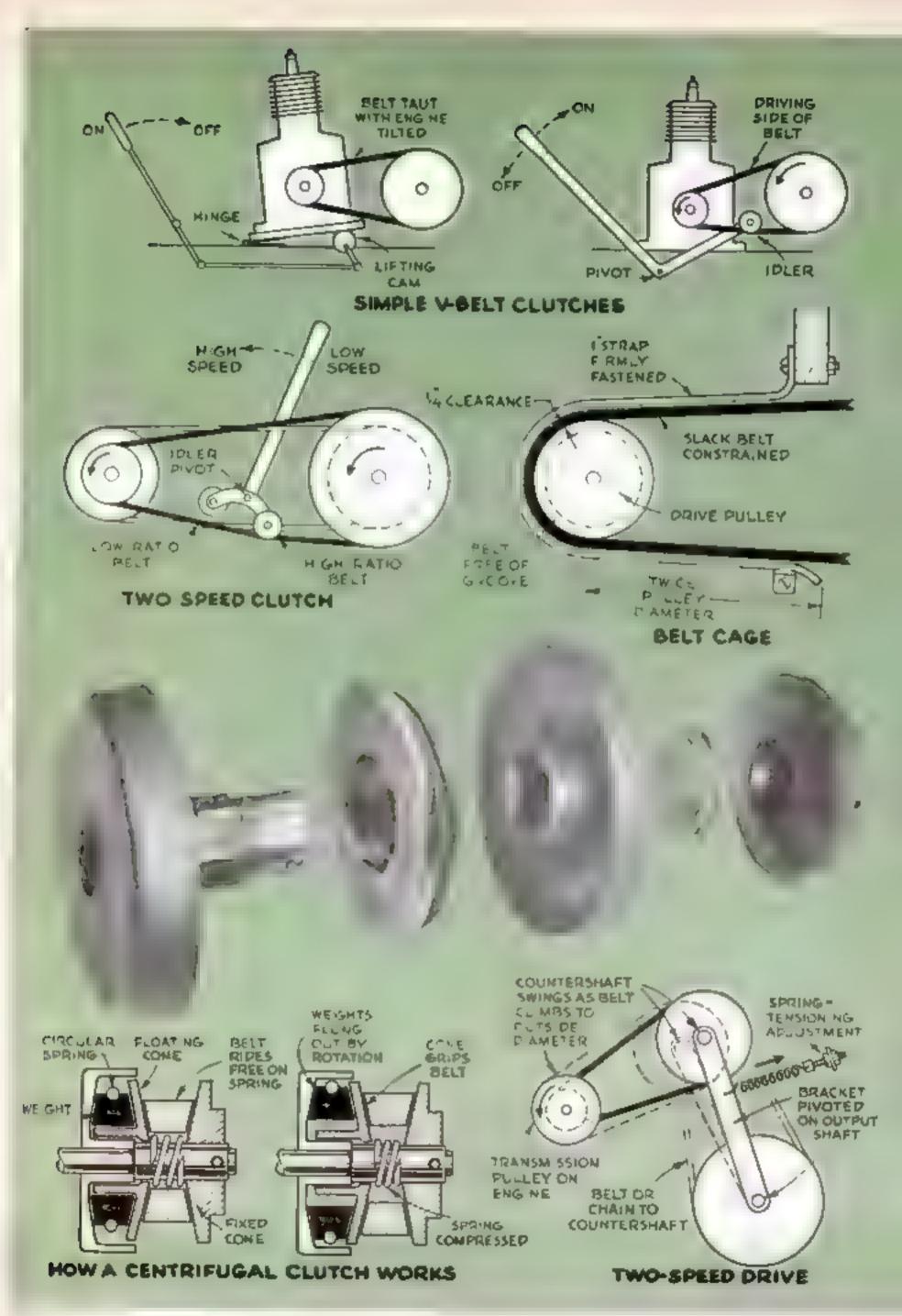
Protecting Soldering-Gun Bulb

A SPOTLIGHT soldering gun can present a problem if you keep it in your toolbox with other tools. Ever try to remove the remains of a broken bulb?

You won't need to if you pad it with a 1"-by-2" piece of foam rubber or plastic sponge held in place with a rubber band. —John A. Comstock, Wellsborg, Pa.

Reducing Size of Faucet Washer

CAUCHT in an emergency when I needed a small faucet washer and had only large washers on hand, I cut down the size of one this way. I pressed it tightly on the shank of a bit, which I chucked in the drill and used as a mandrel, dressing the washer to size with coarse sandpaper.—John Chase Reed, Cincinnati.



What you can do with

Those Amazing New Clutches for V-Belt Drives

By Howard McEntee and Harry Walton

AN ENGINE pulley can do much more these days than circulate a V belt. There are some gadgets around that work wonders in transmitting V-belted power from gas engines and electric motors. You see them more and more on power mowers, riding tractors, one-lung cars and power tools. They can:

Let a gas engine start without load,
 but take hold the moment it is revved up.

Practically eliminate stalling.

Shift drive ratio to suit loads.

 Let you change the ratio, and therefore the torque and speed.

 Act as a gearless, highly effective differential on small vehicles.

Bring AC motors up to speed with-

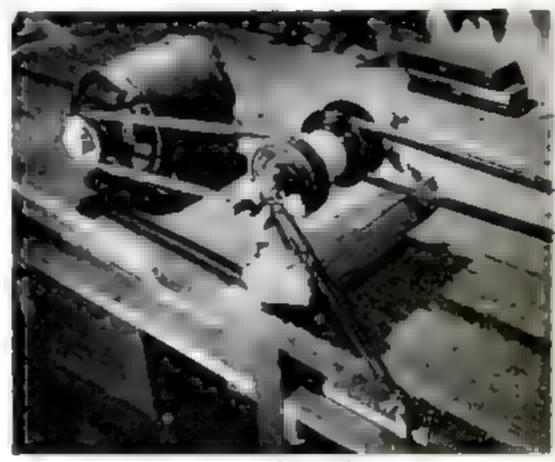
out laboring or blowing fuses.

It's the modern V belt, a slick trick itself, that makes most of these devices possible. The commonest of them are automatic clutches. Controlled by the throttle alone, these clever devices engage as soon as the engine or motor gets

A PAIR OF CHEAP QUARTER-HORSE MOTORS of the same speed rating can be teamed up with a flexible coupling to pull loads that otherwise would require a big, more costly motor. If the belt is driven by an automatic clutch, one motor can even be a junked one with a burned-out and disconnected starting winding, only the running winding being powered. The other motor starts both before the clutch engages. going fast enough to shoulder the load

A clutch is a must with a gas engine for easy starting and control. Although frisky little cars have had the engine directly coupled to the wheels, it's hardly ideal to push the car to start it, and hop on as it takes off.

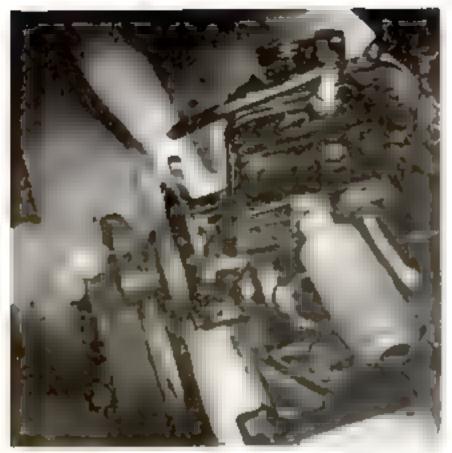
You can of course rig a nonautomatic



TWO VARIABLE PULLEYS are better than one if a large ratio change is wanted. These are both on a countershaft, adjustable between power source and driven unit. Moving countershaft simultaneously shifts one belt to a bigger, the other to smaller diameter. For maximum ratio change, both pulleys should be the springloaded kind: for maximum torque, both the cam-follower type. Two types are shown below.







simplest DRIVE for a one-lung car, from engine to a 7" wheel pulley, is possible because of smooth takeup of centrifugal clutch. It gives high speed, but wears the belt rapidly on starts. A two-step 1:9 ratio would be better.



QUICK SPEED CHANGES on a drill press are made with a spring-loaded variable pulley on the motor, which is shifted by hand to alter ratio. A screw or lever shift could be fitted.

INTERNAL-SHOE CLUTCHES use circular spring, like a garter, that holds in friction shoes. At speed, centrifugal force overcomes spring and shoes move out to press against drum. Some clutches have shoes pivoted at the ends.



clutch on almost any V-belt drive. One way is to mount the engine on rails or a hinged base with about an inch of free movement to tighten a loose belt. The time-honored tensioning idler is also practical, though V-belt engineers shudder at it because it puts an extra bend—often a reverse curve—in the belt.

If you must use an idler, experts plead, have it *inside* the belt pushing outward, as near the larger pulley as feasible, and on the *slack* or nondriving side of the belt.

Where two drive ratios would be useful (in a midget car, for instance) the two-belt drive in the drawings is practical. Side-by-side belta run on pulleys providing the two desired ratios. The "shift" lever has an idler for each belt. Pulled one way it tightens the high-ratio belt; moved the other, it engages the low-ratio belt. Halfway between, it leaves both belts slack, so serving as a clutch.

A belt may drag even when loose because its tendency to assume a circular shape wedges it into the outside of the driving pulley. You can tame it by putting a cage around it. Made of stiff metal about an inch wide and shaped closely to the pulley curvature, the cage holds the belt away from the pulley, provides clean disengagement without belt wear or drag.

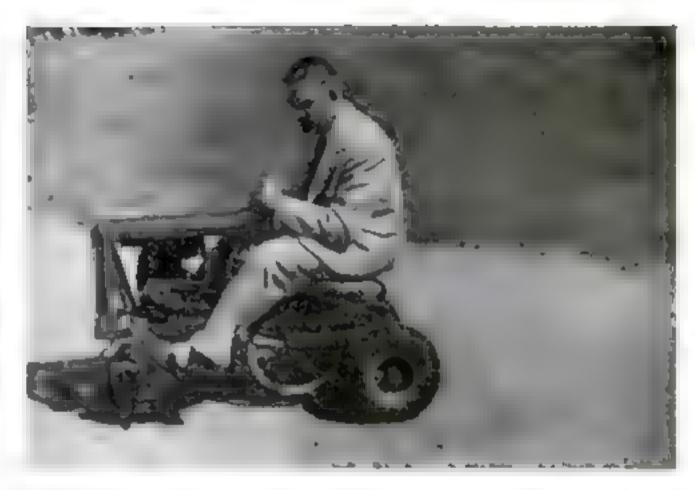
Automatic clutches eliminate manual controls. Centrifugal action engages them more smoothly than you could by hand, with less belt wear.

The more expensive ones have fixed sheaves or pulleys on which the belt is constantly at driving tension. In the shaft-fixed member are spring-loaded shoes lined with friction material. These fly outward under centrifugal force until they bear on the inner surface of the pulley member

Some with shoes pivoted at one end work well only in one direction, but the shoes can be reversed for opposite rotation. Other clutches have weights that move tapered collars along the shaft axis to wedge with mating sockets. One has steel balls inside a garter spring, which in flying outward squeezes the belt sheave between two friction facings.

The belt is the clutch in a cheaper but very efficient type. One sheave flange floats axially on the clutch hub. Internal weights, flying outward as revs mount,

TIGHT TURNS are taken in stride by wheeled vehicle having a dual transmission unit. It requires two V belts and dual countershafts. The twin sheaves automatically shift to suit starting, running and hill-climbing loads. In turns, the one driving the inner wheel shifts down, the other up. The riding tractor shown at right, so equipped, can turn in its own length in either direction.



shove against a coned surface inside the sliding flange, moving it toward the fixed flange.

The V belt, which rides free on a wire collar at idling speed, is nudged up between the flanges and smoothly takes hold. A properly installed belt rarely needs adjusting, for the flanges always grip it just tightly enough to drive without slip.

Clutches for kilosontts. Split-phase electric motors, the cheapest and most common kind used to power large acces-

[Continued on page 260]

				HS					
Maker	Model	Price	Type	Size (inches)	Ratio to 1	Max. Np.	Min. Dia	R.P.M.	Notes
URINGS & STRATTON	89002	\$11.15	٧	3 dia 2 w	1.38	2 Gas	2"		A i metal
FARM EASY SERVICE	4600	10 45	C	5% dia		3 Ges	3"	1000	Privated shoes
LOVEJOY FLEXIBLE COUPLING CO.	135 manuar	8 00	٧	315 dia 3 w	2 00	Va E ec	1 6"		Plastic sheave
	maneal	13 50	٧	B t 6 t 5	3 3	45 E 46		1150	Double sided pu sy
MFS CO	manua)	7 25	٧	3½ dia 3 w	2 00	¥2 E.ec	1.5"	1750	Locking type
MERCURY CLUTCH DIV	Ex-10-25	5.50	С	3 dia. 2 w.		16 Elec.	21/2"	1800	
	4517-18	12 50	С	4 dta 2 w		2 Gas	127	1800R	12 tooth spracket
MIDGET	MD58	13 95	C	51/2 that 21/4 m		345 Gas	3"		Pivoted shoes
SALSBURY CORP.	300	57 50	CV	12 x 6 x 5	415	3 Gas		1200R	Two pulleys, special be t
	G5A 10	11 00	C.	315 dia 3 w		245 Gas	21.4	1500R	
	E5A 10	11 00	С	3½ d a 3 w		Vá Elec	214"	1750	
V-PLEX CLUTCH OLV.	18C4A2	5 95	C	3 dia 2 w		1∜⊅ Gas	2"	1800	All metal
	18T5A25	8 95	CV	31/2 dia 2 w	1.5	142 Gas	2"	1800	A I metal
	18D5A25	17 95	cv	3½ dia. 4 w	16	2 Gas	2"	1800	Acts as differential

Control only, Vivariable ratio only RPM siare specified maximum or engagement speed. It following means release RPM Above listing is not complete, but is offered only as representative up to listed are in most cases smallest of each type made by the manufacturer named. Most can be had with different shaft-bore sizes. Almost identical types made for gas engines or electric motors, differ chiefly in engagement speed, which is usually lower for electric motors.

The Camera That's Made for

TINY new camera designed to let dentists take pictures inside people's mouths is selling like hot cakes—to hobbyists, home craftsmen, stamp collectors, model builders and nature lovers.

The reason for its surprising uses is its remarkable ability to take jumbo-size close-ups as little as 4" away from a subject. You can make lifelike portraits of miniature models; full-color blow-ups of flowers, birds and insects; copy plans; or record details of a shop project.

The secret is a super-small lens open-

ing—f/64—that works something like the old pinhole camera. It produces a depth of field so great that you can guess at the distance, be several inches off and still get clear, sharp pictures.

Called the Startech, the new camera is a modified version of Kodak's inexpensive Brownie Starflash. It has the same box-camera simplicity. You can't miss. To shoot at 4" to 8", you move a pointer to a red arrow, slip on a matching red close-up lens and click the shutter. Light from a built-in flash provides correct exposure indoors or out.



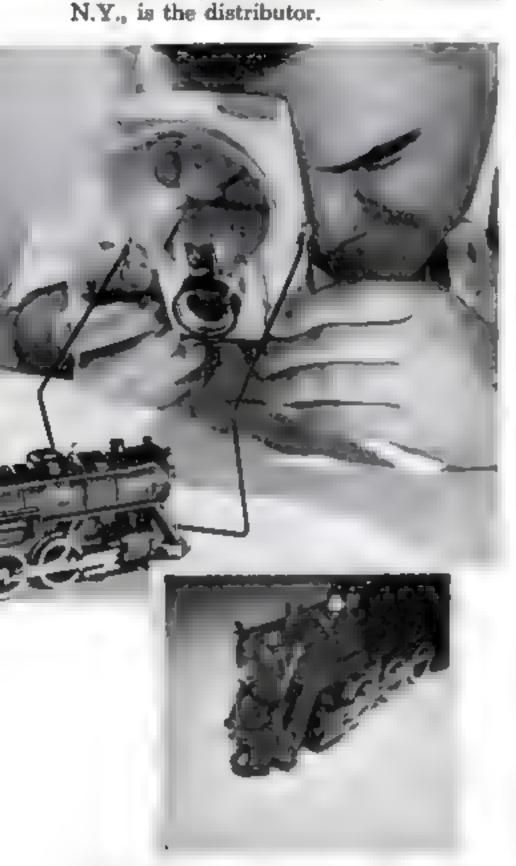
SPECIAL COLOR-COOED LENSES slip over regular lens to adjust focus down to 4". Distance indicator at bottom of camera is the only setting you make. Moving it to either red or green

arrow shows whether to use matching red or green lens. Wedge-shaped prism at bottom of plastic flash shield swings in front of view-finder to correct for parallax at close range.

Close-Ups

For shooting at 10" to 16", a second setting opens up the lens to f/27. You just move the pointer to green and slip on a green-coded lens. A parallax-correcting prism built into the plastic flash shield makes sure the viewfinder shows exactly what the lens sees.

The camera uses standard M-2 flashbulbs and 127 roll film. Panatomic-X is recommended for black-and-whites, Type F Ektachrome for color. A kit (camera, lenses, film, bulbs) sells for \$34.75. Lester A. Dine Co., 58-06 37th Ave., Woodside,

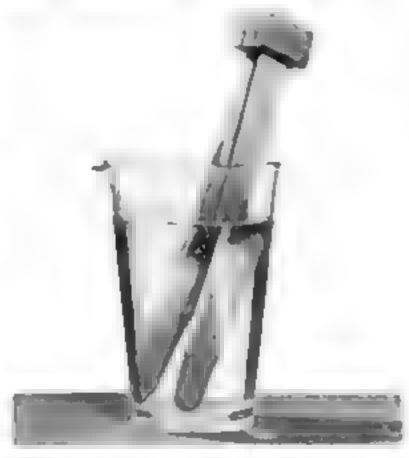


ACTUAL-SIZE PRINT made from 127 film shows close-up of tiny HO-gauge locomotive shot at 5". For critical work, wire frame slips into the front of the camera to indicate exact distance.



Gauging Depth of Post Holes

Is you mark your post-hole digger at half-foot intervals, it will save you time and steps. You can then tell at a glance how far down you've dug.—
Tom Raymond, Alamogordo, N. M.



Clean Tongs Keep Prints Clean

Dirry print tongs often mar glossy photo prints. After you use a pair, it's a good idea to soak the tongs in one or two changes of clear water to remove developer residues that can cause the damaging marks.—Hartwell J. Kennard, Gonzales, Tex.

An Old-Time Engine That Refuses to Die

ESPITE atomic power and the space age, readers of Popular Science are as interested as ever in building piston engines. They still ask for plans for the mystery engine that appeared in February, 1950.

Published projects ordinarily live a year or two. But requests for copies of this one keep coming in, nearly 10 years later, and it's now out of print. At this point, plans are available only as a blue-

CHAMP BUILDER of the engine is probably Waldemar Hansen, Los Angeles machinist. He made six one-lungers, two two-cylinder versions, and this six-cylinder giant. One cam works all valves. Five con rods go to a master rod. The flywheel is from a sewing machine.

print from the designer and builder of the original engine.*

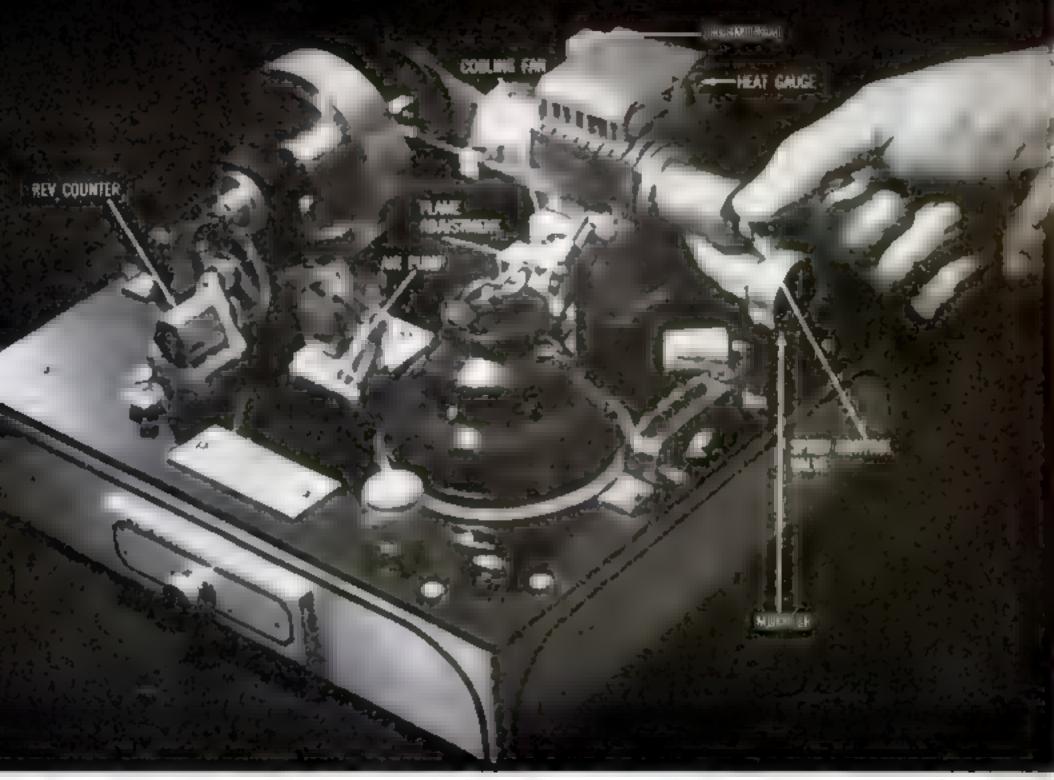
A real old-timer, though updated with modern materials, the engine works like the very earliest piston engines. These used steam or the explosion of gas or coal dust, chiefly to fill the cylinder on the piston's outstroke. As the steam condensed or hot gases cooled, a partial vacuum formed. Atmospheric pressure then pushed the piston in.

It's fun to run, for the engine has a machine-gun exhaust and is powerful enough to drive light models. More than 420 sets of castings have been sold, and countless other engines have been built from stock, pipe fittings and scrap. One man made six for his grandchildren. Another grouped six cylinders into a large radial engine (at left).

Colleges and vocational schools use the castings to train student machinists. Construction requires only a lathe and a drill press, but gives practice in many machining techniques.

The super-gadgeted version shown on the facing page has a boned hard-chrome bore, an aluminum piston with colloidal graphite baked on, a muffler, thermostatic cooling, and an adjustable valve that controls speed from 175 to 1,000 r.p.m.

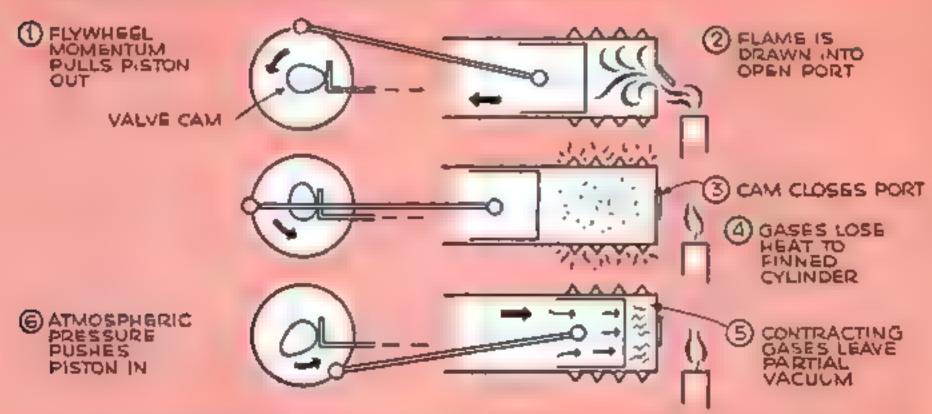
*Flord McGuckin, 314 No. Monroe St., Rulgewood, N. J. Blueprint St. Castings, all needed stock, and blueprint, 58.75 peripaid.



Jumes M. McKinney of Englewood, N.J. this one has ball bearings, automatic electric conf-

ing, a rev counter, temperature gauge and other extras. It drives a tray air pump. Base holds tools and batteries for the fan motor

Solution to the mystery of how the engine works

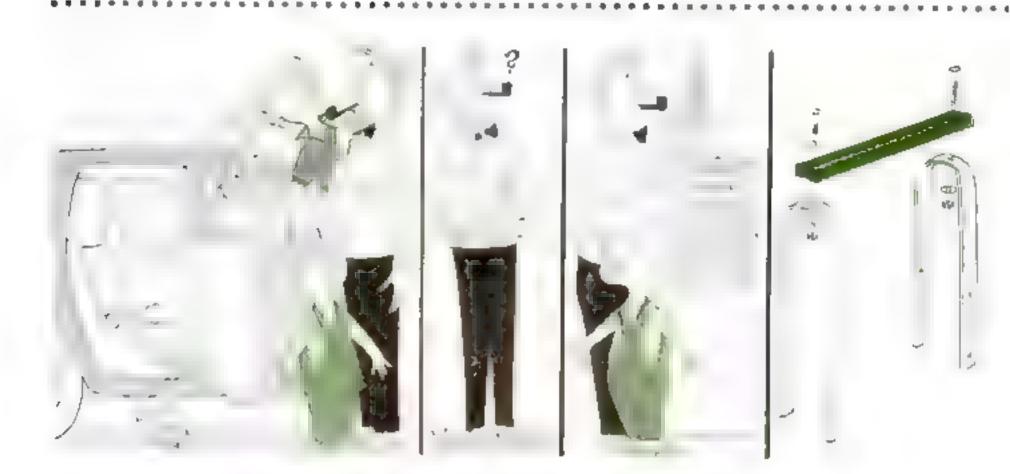


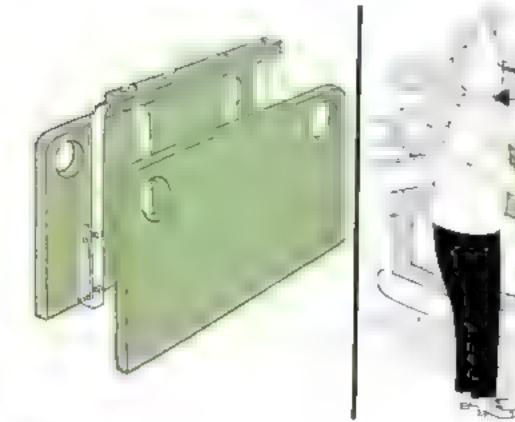
A FLAME BURNS OUTSIDE the port, here shown at the end of the cylinder for clarity. At 1,200 r.p.m., the whole sequence shown occurs in

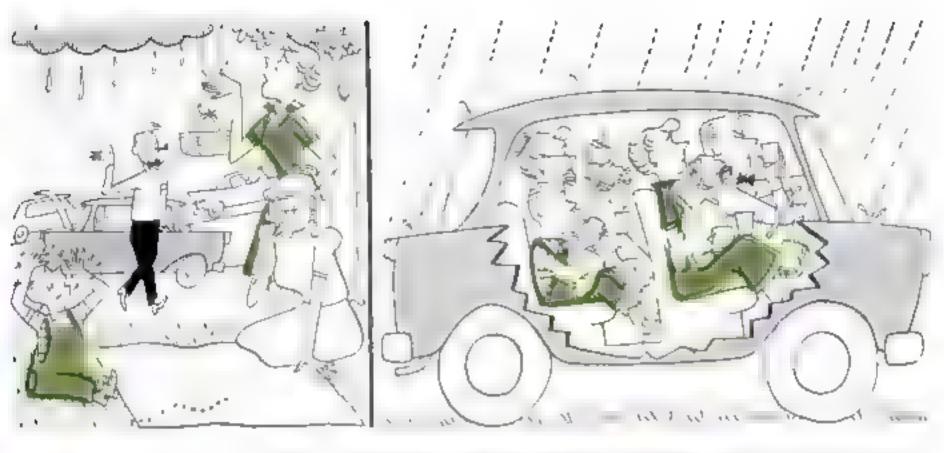
1 20th second. Exhaust pop results as the piston forces residual gases past the spring-loaded valve at the end of its instroke

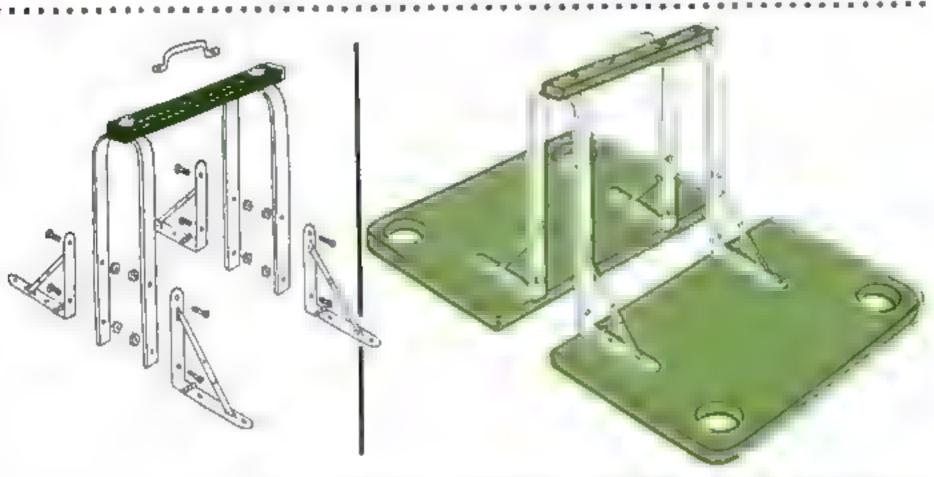
Wordless Workshop

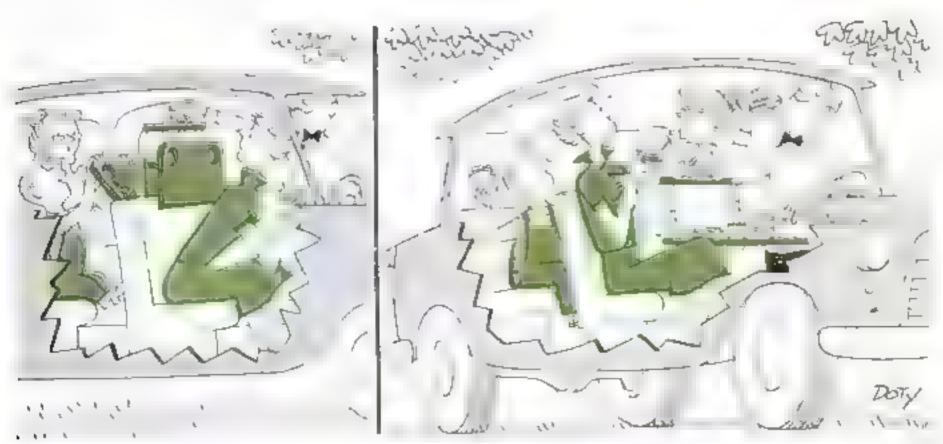
By Roy Doty and Bebe Morrison











Can You Beat These High School Mechanics?



Laying into the job. Months of training have taught boys that nimble fingers and an understanding eye are faster than the most elaborate test equipment.

By Hubert Luckett

IWENTY shiny new Plymouths are facing the grandstand. Not one of the engines will start. Twenty Plymouth service managers are each nursing a box of spare parts. Twenty teams of high-school mechanics are racing to correct some 12 to 20 "bugs" put into the cars by the service managers, now the judges in this new kind of interscholastic competition.

The winners will be the first team to correct all the troubles and drive their car across the finish line.

Plymouth sponsors these contests in various parts of the country in cooperation with local school officials. Each school is represented by a two-man team chosen from among the top students in vocational auto-mechanics courses.

Like to match your mechanical know-how with the

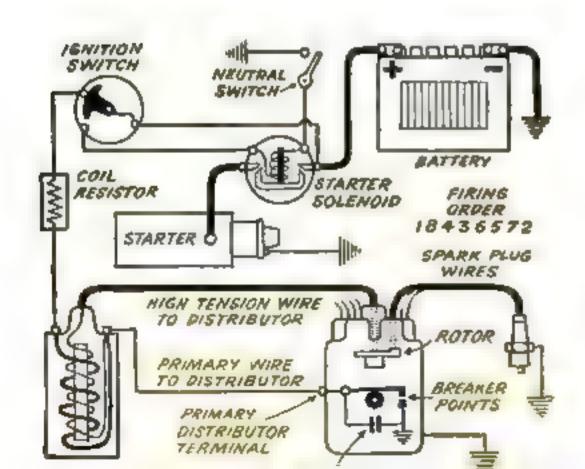
You can match your trouble-shooting skill with the high-school students who, in 22 minutes, found and corrected 19 malfunctions similar to those in the following quiz. Most of the troubles simulate those you might have in your own car if it conked out on the highway, was running poorly, or wouldn't start in the

morning. Some could be caused only by a practical joker.

In the actual contest, all 19 malfunctions were present when the contestants started to work. As described here, a single malfunction is responsible for each complaint. Tests given are the sort used by the students to trace the troubles

rapidly. Deductions that can be made from the results of these tests will narrow the possible causes to the one most likely trouble.

Following are 10 problems, and your preliminary diagnostic steps. What would you do or diagnose next? You're on your own, so think hard before hurrying to page 244 for the answers.



simplified flectrical circuit of a typical engine shows the parts involved in the tests. Information gained from each test will be more apparent if you trace through the circuit while you are reading the description.

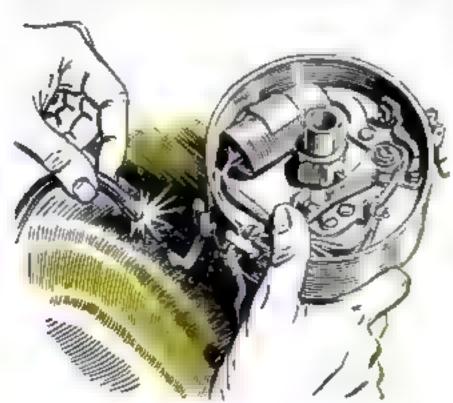
54 POPULAR SCIENCE SEPTEMBER 1939



prize-winning contestants? Here are 10 challenges

Your engine is hard to start; it misses at low speed; acceleration is poor; it runs fairly well at high speed.

You remove the air cleaner and check the carburetor. Choke operation is okay. You can see that fuel is reaching the carburetor when you work the accelerator



pump. Next, you check the spark at the plugs with the engine idling. You find the spark is weak and erratic. You stop the engine, remove the distributor cap and remove the coil high-tension wire from the cap. With the switch on, and holding the tip of the high-tension wire near a clean spot on the block, you flick the breaker points with your finger. There is a juicy spark to the block, Inspection of the rotor and cap reveals no flaws. What's wrong?

2 Your car won't start. The starter doesn't operate.

You try your headlights. They don't burn. Using a short piece of insulated wire for a jumper, you hold one end on the positive battery terminal and rake the other end lightly across the negative terminal. You get a hot spark. You get no spark when you check from the positive terminal to ground.

3 Your starter operates vigorously but your engine won't start.

You remove the wire from a spark plug and find there is no spark when the engine is turned over by the starter. You take off the distributor cap, remove the wire from the center tower, hold the tip of the wire close to a clean spot on the block and flick the points with your finger. No spark. You turn the engine over until the points are open and note that the gap looks about right. You remove



the primary wire from the distributor and touch it to the block. It sparks. It also sparks every time it is touched to the distributor terminal.

4 Your engine starts and runs all right but dies abruptly when you take your foot off the accelerator.

You remove the air cleaner and check to see if some joker has backed off your idle-speed adjustment screw. Its position looks about right. You can see that fuel reaches the carburetor when you pump the accelerator. There is a good spark at the plugs when the engine is cranked.

Taped air filter was the meanest gammick. Many contestants got the engine running only to find it wouldn't start again for the dash to the finish line.





Your starter operates normally but the engine shows no signs of life.

You pull a wire from a spark plug and find there is no spark when the engine is cranked. You try the coil hightension wire and get a good spark to ground. The high-tension wire is making good contact at distributor cap, center brush in the cap makes good contact with the rotor. Cap is in good condition.

6 Your engine starts, runs briefly, then dies. Starter operates vigorously, but engine won't restart.

Your gas gauge shows almost a full tank. You can see no fuel delivery in the carburetor throat when you work the accelerator pump. You disconnect the gas line at the carburetor and crank the engine. No fuel delivery. You disconnect the gas line from the inlet side of the fuel pump and spread a scrap of paper under the open end of the line. You go to the rear of the car and place your mouth over the filler opening of the gas tank and blow into the tank. You return and find the scrap of paper is still dry

Your engine runs very rough at all speeds; it has no power; it back-fires through the carburetor.

You find a wire loose in one of the distributor towers but shoving it in tight doesn't help. Routine check for spark and fuel doesn't yield any clues. Timing light indicates correct timing. Cylinder compression is normal,



156 POPULAR SCIENCE SEPTEMBER 1959

CONTINUED



Champion-equipped outboards run smoothly. Test at Marineland, Fla., proves they don't even frighten tish.

Q. Why does every major manufacturer of outboard motors use Champion spark plugs?

A. Because Champions deliver the quick starts and dependable performance outboard owners want. For performance like this in your *car*, put in Champions every 10,000 miles. You'll save gas, too!

World's favorite spark plug-engineered for every car built by Ford, General Motors, Chrysler, American Motors, Studebaker-Packard and every major foreign maker.



Starter okay but engine won't start.

Routine checks show that fuel is reaching the carburetor and there is good spark at the plugs. The plugs check; choke operation is normal; there is no indication of flooding.



Air-pressure tank proved valuable to this team. Equipment choice is left to each team. Elaborate analyzers vied with a simple jumper wire and know-how. The jumper often came out ahead.



Engine fires readily but won't run.

You remove the air cleaner and check for fuel reaching carburetor, normal choke operation and idle adjustments—all okay. You get spark at the plugs when cranking, but no spark from the coil high-tension wire when the points are flicked by hand. You remove the primary wire from the distributor and find you get no spark when you touch it to the block. After puzzling this over for a few minutes, it dawns on you that you have been the victim of a prank.

Starter operates but engine won't start.

You find no spark at the plugs or from the coil high-tension wire to ground when the engine is cranked. You remove the primary wire from the distributor and with the ignition switch on, touch the wire to a clean spot on the engine block—no spark. Working back through



the primary circuit, you disconnect the wire from the battery side of the coil resistor—it sparks when touched to the ground. You replace it and try the wire connected to the battery side of the coil primary—no spark. Then you check all ignition primary wires and connections. They all seem to be in good shape.

Now turn to page 244 for the answers

Winners of the contest at Salem, Mass., were Harold Clough and Donald Martin. They were offered jobs on the spot. With them is their instructor, Robert Thompson. At left in R. E. Johnston of Chrysler



Short Cuts and Tips

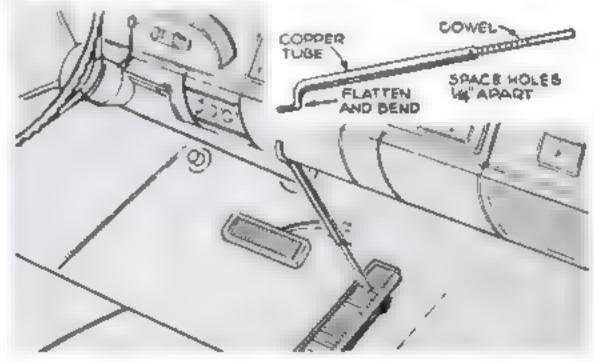
Tube Layout Upside Down

I PLACE a carbon paper, carbon side up, under the paper on which I draw the tube layout for a TV set. This gives me a top view on one side, and a bottom view on the other. This is fine for underneath work.—S. Mammano, So. Pasadena, Cal.

Such as hinges and knobs by boiling them in solution of trisodium phosphate. This is a white powder sold at most paint stores for washing grease and dirt off walls. Put enough water in an old pot to immerse the parts, add three or four tablespoons of the powder, and boil for about five minutes while stirring. Rinse parts in hot water.—Andrew Vena, Philadelphia.

Throttle Stick is Adjustable

The adjustable throttle holder (right) is intended to help in tune-ups or when warming a balky car that isn't fitted with a hand throttle. Place the bent end under the edge of the dash and the other end on the gas pedal. The dowel slides in the tubing and a nail will hold the pedal at desired speed.—J. Hodel, Bradley, Ill.



SHARPEN

Hole Cutter for Soft Jobs

I cur smooth round holes in such soft material as cardboard and leather with a sharpened bottle cap. I fasten the cap to a bolt, clamp in my electric drill, and sharpen the cap edge against an emery wheel. Then it makes cuts without burrs.

—R. H. Richter, Detroit.

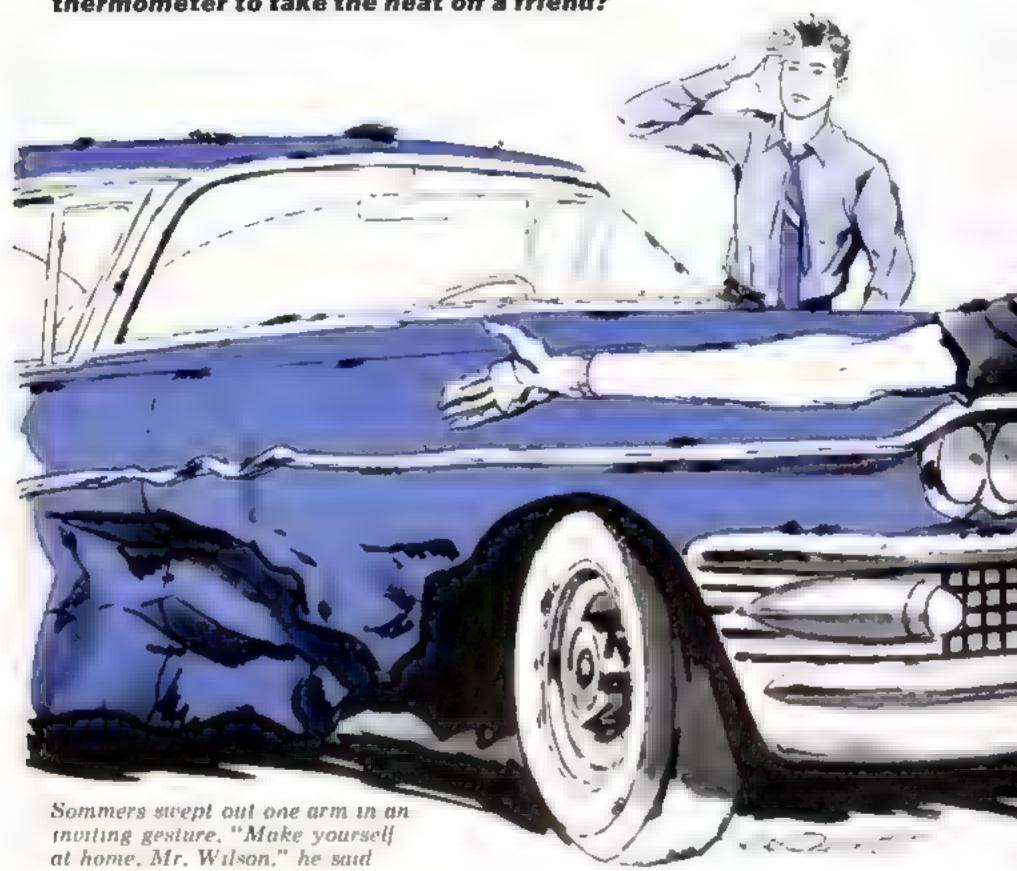
Toolholder from Tubing

RANDOM lengths of 1/2" and 3/4" aluminum tubing can be used to make fine toolhoiders, such as the one for pliers shown at right, Flatten a 3"-long section in the jaws of a vise. Leave the rest of the tube round, bend at a 45° angle to the flat and screw to the tool board .- Arthur R. Tanner Jr., Poughkeepsie, N. Y.



Gus Gets into a

That broiling sun gave Gus an idea. Could he use the thermometer to take the heat off a friend?



By Martin Bunn

US Wilson sat tilted back in a chair against one side of the shaded Model Garage doorway. An oversize fan was aimed at him from the floor. "Hot enough for you?" he asked.

Stan Hicks looked up in disgust. Naked to the waist, he was hosing down the paving around the garage. Suddenly he swung the hose nozzle around, just missing his boss, bent over and doused himself from waist to head.

Gus grinned. "I get the idea, Stan-

no particular need to drown yourself."
"Why don't we close up shop and go
swimming? There won't be any business

on a scorcher like this."

Gus pointed down the street, "Slim Sommers has got himself a customer for

his Continental Garage."

"Got himself a wreck," Stan answered, squinting at a tow truck hauling a heavy sedan with a damaged right-front fender and door, "And that car limping along behind with a bent front bumper had something to do with it,"

"Say, that's George Crowley behind

IBO POPULAR SCIENCE SEPTEMBER 1959



out by the wailing noon siren. He got up and waved to his assistant, "Keep cool," he said, heading down the street. "I'm off to the air-conditioned diner."

WHEN Gus returned he found the lawyer with Stan. Their faces were hidden behind wedges of watermelon.

Crowley dropped his rosy chunk to mop his perspiring face. He had his jacket off and the knot of his tie loosened.

"Hear you saw my car," he said wryly.
"Didn't look too bad from what I saw,

George, How's the wife?"

"Fine, Gus. She'll be asleep now, so

"You'll like these power scindows when you get used to them."

we've got a couple of hours to look into things."

"We?" Gus asked "Better brief me."
"Well, you see," Crowley began, "I
ran into Tom Walker's car . . ."

"You mean Butterball, the insurance broker?"

"He's the one. But it was my fault," Crowley went on, "I was tired, worried not too alert in my driving."

"Stop worrying, George," Gus said.
"Your insurance will cover it."

"Not when it's lapsed. When Mary got

sick I forgot to send the check. No, I'll have to pay out of my own pocket."

"Tough—with hospital bills," Gus sympathized, "But from what I saw of the car, they can't charge too much."

Crowley shrugged. "Sommers tells me I put Walker's transmission out of kilter. Those things run into dough."

"You must have banged into him

pretty hard, George."

"No, I didn't. Honest," Crowley said,

"I just can't figure the thing out at all."

"Okay, let's go see what's cooking. You're entitled to your own estimate—especially if you're footing the bill."

As they approached the Continental Garage, two men peering at the bangedup car presented an odd rear view.

One, a lanky six-footer wore a farmer's hat and coveralls cut short at sleeve and trouser ends. The other was five-byfive. Decked in a tropical helmet, a wild shirt, Bermuda shorts, he resembled three balloons stacked on sausage legs.

Slim Sommers and Butterball Walker turned around as Gus and Crowley ar-

rived.

"WELL, look who's here," Sommers greeted them. "I kinda expected Mr. Crowley to bring his friend Gus Wilson over."

Gus walked over and examined the sedan's crumpled fender and dented door. "Just dropped over to check on the damage to Mr. Walker's car," he said

"Tell him," squeaked Walker, pushing back his oversize helmet. "Tell him about the transmission."

"The frame and front end are okay," Sommers said, "but the transmission took a beating—

it'll have to be replaced."

"I'm not doubting your word, Slim," Gus said, "but it doesn't look as if this car was hit hard enough to damage the transmission."

"Looks are sometimes deceiving, Gus," Sommers said pompously. "You know how collisions are sometimes—fender hardly dented, but you find a bent frame; hit a man in the rear wheel, bend the front axle."

"It happens," Gus agreed. "Okay if I check on a few things?"

Sommers swept out one arm in an inviting gesture. "Make yourself at home."

Gus started the engine and checked the transmission oil. Then he shifted into reverse. The car backed up, but wouldn't move in any driving range.

"Satisfied?" Sommers asked

"Not yet, Slim. Let's push the car up on your lift."

With the car raised, Gus took a hydraulic gauge from his kit and connected

GASITE'S 33-ZONE engine protection

Guaranteed Protection for your car's power and performance

The technical staffs of Casite and its parent organization, Hastings Manufacturing Company, specialize in just one thing—the maintenance of automotive engines. Working together, these experienced scientists and engineers have utilized the latest chemical discoveries to improve car performance, combat engine deterioration and wear.

Use these new Casite products with confidence. Results are guaranteed, or double-yourmoney back!

for the FIRING ZONE

for the FRICTION ZONE

for AUTOMATIC TRANS-MISSIONS



IMPROVED CASITE ... FOR THE FIRING ZONE

The nation's favorite "Tune-up in a can" now vastly improved with spark plug and carburetor cleaner and acid inhibitor. Recommended for use in the gas tank or carburetor air intake to free valves and rings and clean carburetor and spark plugs. Also for use in crankcase oil for quicker starting, less start-up wear and to break-in new or rebuilt engines.

List price \$1.25.

CASITE 3-C... FOR THE FRICTION ZONE

A new heavy duty crankcase concentrate that protects your car's engine. Added to your motor oil, it gives you a tougher oil that won't thin out—oil that cushions the load on every working part—cuts friction and wear. Casite 3-C, with Barimen, stops hydraulic lifter noises, quiets and smooths the engine. It cleans the engine, and heaps it clean. Protects against acid, rust and corrosion, too.

List price \$1.50.

CASITE "SMOOTH-SEAL" . . .

For smooth, quiet, leak-proof performance, Smooth-Seal reduces jerks and roughness in automatic transmissions. Stops and prevents leaks due to hardening or shrinking of the transmission seals. Reduces shock and wear, enables delicate parts to last longer. List price \$1.95.

use all 3

to keep your engine and automatic transmission clean . . . friction free . . . at peak operating efficiency.

it to pipe-plug outlets built into the transmission. He checked the drive-pump and accumulator pressures at various engine speeds. Then he removed the bell-bousing cover and flashed a light inside. He turned to the car owner.

"Mr. Walker," he said, "I'd say that this transmission has been so hot that the nonmetallic seals and gaskets are seri-

ously damaged."

BUTTERBALL bounced up from a chair he had col-

D chair he had collapsed in. "Then Crowley did it sure. My car was running smooth as silk before he crashed into me."

Crowley groaned.

"And that means I'm stuck with a big repair bill."

"I'm not so sure, George," Gua said, rubbing his chin. "Let me ask Slim here a few questions."

"Look, Gus," Sommers said, "it's all cut and dried. I'll give Mr. Crowley a break on the bill."

"That's not the point, Slim. When did you pick up Mr. Walker's car?"

"All right, Mr. D.A. Wilson," Sommers said grudgingly. "It was 11 o'clock sharp. I looked at my watch because I

was in a hurry to get home for lunch by noon so the missus could make a club

meeting."

"And you almost made it. The noon siren sounded just after you passed the Model Garage. George tells me the accident took place at Orrville Junction—47 miles from my place. And you made it in one hour. That's pretty fast towing."

"So what?" Sommers challenged.

"So the transmission damage was caused by your tow, not by collision impact."

"Whoa, there, Gus—them's fighting words. I know enough about this kind of transmission to tow it in neutral."

"Sure you do, Slim," Gus said. "But that's not enough. The book says that even in neutral a dual-turbine drive should not be towed faster than 30 miles an hour on a normal summer day—around 80 degrees." He stopped and pointed at a big thermometer on a shaded post.

"Why," Crowley said, "it reads 102

right now."

"And," Gus continued, "it was much hotter at noon out in the sun. Then, too, Mr. Walker's car has a triple-turbine drive—which isn't safe to tow above 25 miles an hour."

"Then I'm not stuck?" Crowley asked.

"No, George. When Slim was towing, the front, motor-driven oil pump of Walker's car wasn't operating. And under that condition, even in neutral, the turbine develops drag, creating excessive heat."

Sommers had been listening thoughtfully. He looked at his wrist watch "I have to make a phone call to check on some parts. Be right back."

While Sommers was gone, Gus and Crowley played the soft-drink machine, bringing a bottle of pop over to Walker, who had collapsed into a chair again, his red face streaming.

Sommers came out of his office. "Mr. Walker," he said, "you handle my insurance. Suppose I really did pull a fool

boner like Gus says—am I covered?"
"Certainly," Walker said, bristling

"Then you're getting a brand-new transmission on the insurance company."

"You're agreeing that it was your

fault?" Gus asked

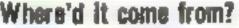
"Well, yes, Gus, now that I've checked in the manual." Sommers grinned, "That was my 'phone call.' But I wasn't going to admit anything till I found out if my insurance covered it"

As Gus and Crowley left, the young lawyer was profuse in his thanks.

"All I did was estimate a wreck," Gus said modestly.

Crowley laughed, "And instead you wrecked an estimate."

Next Month: Gus fixes a race.





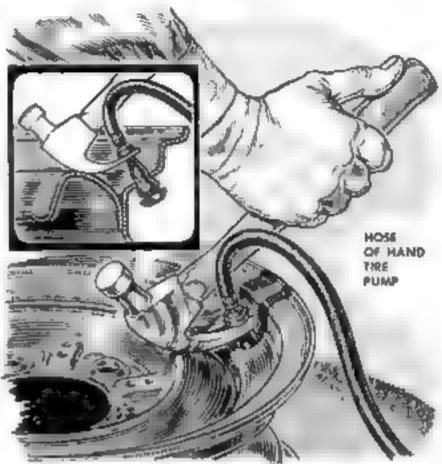
Bunhel: It would take a heap of "hollowed hands" to fill a bushel as we know it today, but that's what the word meant when the Celtic settlers of Britain used it. An American bushel contains 32 quarts; the English, 33.026. The difference? Colonists brought over English standards and kept them. The English changed theirs in the 19th century.

164 POPULAR SCIENCE SEPTEMBER 1959

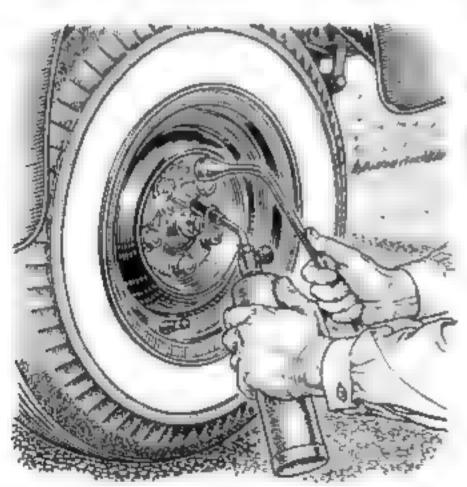
Hints from the Model Garage



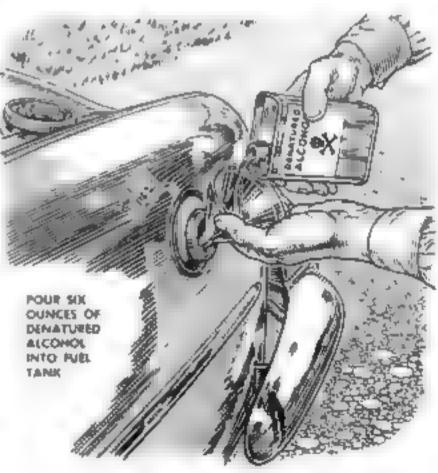
Whenever you remove a thermostat, check the air-bleed hole to see that it's not clogged with rust. A clogged bleed hole will trap air in the engine block, making it difficult to refill the system completely and overheating will result.



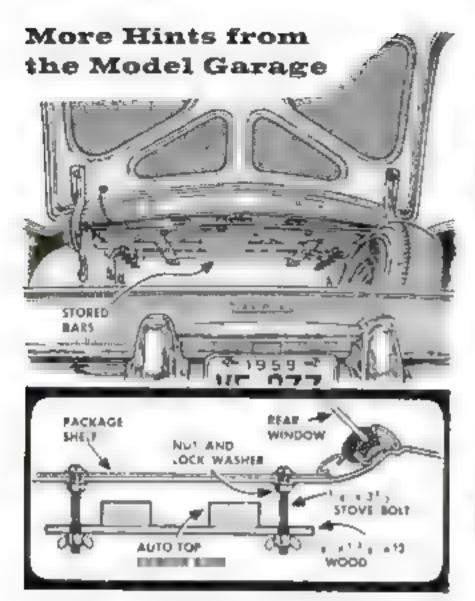
Replacing a tubeless-tire valve need not be difficult even if an installing tool is not available. Press the valve in the run hole, then screw on the tire pump fitting. Place a claw hammer under the fitting and pull the valve into position.

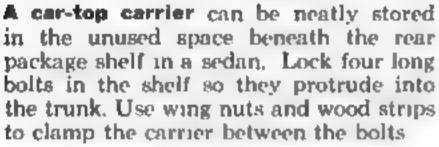


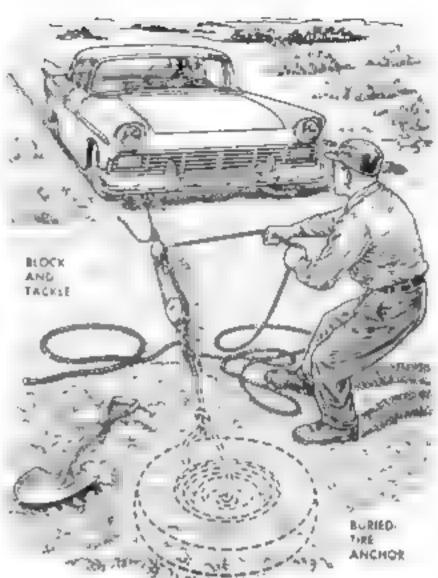
An over-tightened wheel nut can easily be removed by heating it briefly with a torch. Hold the wrench ready to loosen the nut the instant you take away the torch, before the heat transfers to the stud and expands it, too.



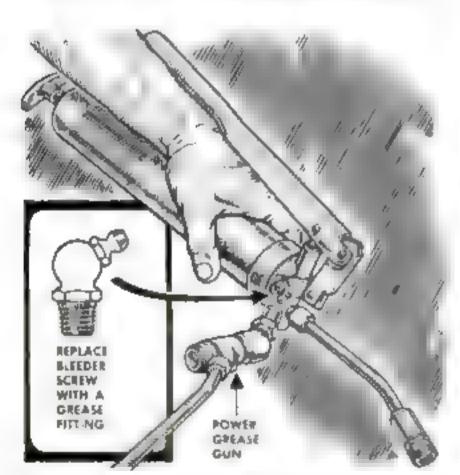
To clear the gas tank of water caused by condensation, pour in about six ounces of denatured alcohol—the kind you get at the paint store. The alcohol absorbs the water and burns away without causing the engine to miss.



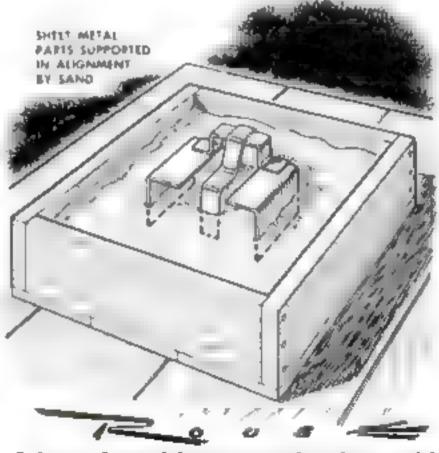




Block and tackle won't pull your car out of a soft back road or a sandy seashore if there's no place to secure the ropes. An effective "deadman" can be made by burying the spare wheel—the deeper the better—and using it as an anchor



To eliminate the mess of spooning grease into a grease gun, remove the bleeder screw and install an ordinary grease fitting. You can then have the gun filled at any service station without opening it. Cost per filling is about 50¢.



A box of sand kept near the shop welding machine is useful for holding irregularly shaped parts together while they are tacked or brazed. Pressed in deep, the parts are firmly held, and the sand doesn't steal heat from the metal.



Short Cuts and Tips

Quick-Removal Temporary Signs

TEMPORARY signs for parking or other directions at picnics and the like can be quickly set or removed if you staple them to steel U-rod uprights instead of wooden stakes.

Bend each rod end at two right angles and you can drive them into the ground with one foot,—G. E. Hendrickson, Argyle, Wis.

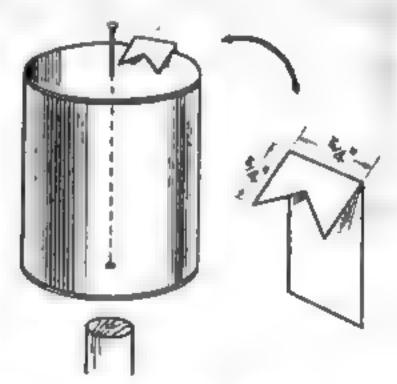
AFTER you open a paint can for the first time, punch several holes in its recessed lip. Then, when you close it, leak paint through the holes. It will form a seal that will keep the leftover paint from hardening and forming a scum on top.—E. L. Enochs, Modesto, Cal.

repeatedly because of high humidity in the basement. I put a replacement in a plastic freezer bag, after making the connections, and closed the mouth with a rubber band. The timer has never shorted since.—Robert A. Brown, Shelbyville, Tenn.



Setting a Hole Cutter

A QUICK, accurate way to set a hole cutter is with calipers opened to exactly the required diameter. Hold the cutter upright with its centering drill in a shallow hole in hardboard scrap. You can then set the cutting chisel so it barely touches both caliper legs when given a half turn.—Ken Murray, Colon, Mich.



Easily Made Fruit Picker

You can make an efficient fruit picker by nailing a tin can to a long pole. Flatten the can slightly on one side and solder on a piece of stiff tin or brass, notched and bent at right angles. To use the picker, push the cup over the fruit with the stem in the notch and pull gently.—R. C. Roetger, Warrington, Fla.

Now... a camera built to THE KODAK SIGNET 80

Whether you work in wood, metal, or plastic . . . skin-dive or study the stars . . . specialize in sports cars or specimen roses . . . aircrast models or model rail layouts . . . electronic experiments or action photography . . . this Kadak Signet 80 Camera should be your teammate and companion.

It has a part to play . . . making your hobby better—more rewarding.

Precision camera? Yes. Expert's camera? Yes—but you don't have to be an expert to operate it. Kodak, in the American tradition, has created

a camera with all the features the experts demand—but easy-to-use in every feature.

See the superb new Kodak Signet 80 Camera at your photo dealer's. Examine the interchangeable lenses. Test the photoelectric meter, the "natural-size" finder, unique new "injection" loading, the connectors for both flashbulbs and electronic flash. It's the camera to team up with your hobby. Yours for only \$129.50, with 50mm f/2.8 lens—or as little as \$12.95 down.

Here are a few ways the Signet 80 Camera can make any hobby richer, more rewarding...



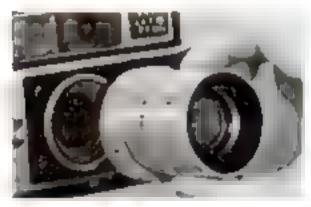
You get needle-sharp pictures with the coupled range under - 2 by feet to infinity! Compaes to all lenses



You shoot exactly what you see, with the brilliant big-as-life view-finder. Image is life-size?



You read exposure easily—with ultra-sensitive photoelectric meter! Sets for all films.



You change lenses instantly switch to wide-angle or telephoto. Just drop in, start shooting!



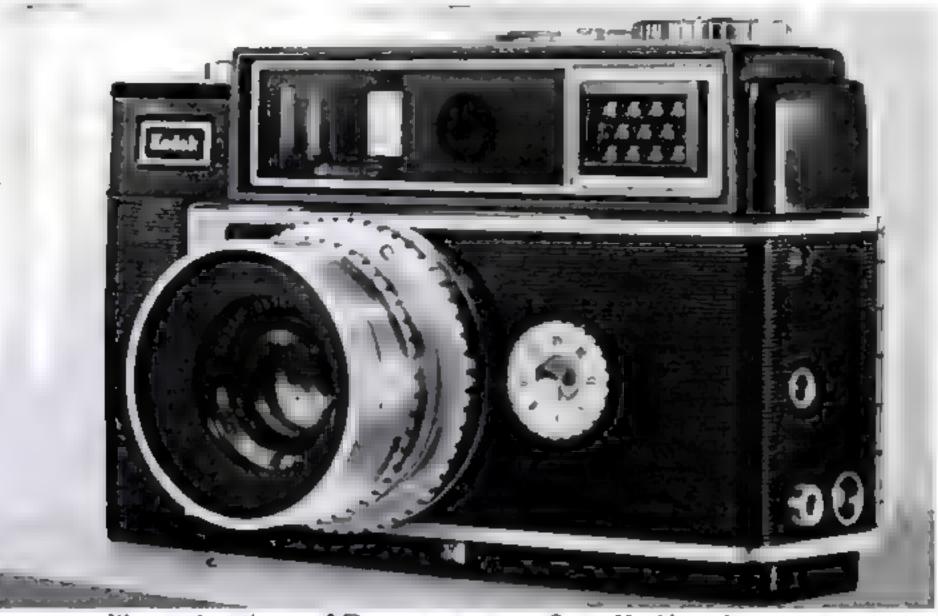
You pull in faraway scenes, take candid portraits with the telephoto lens. (90mm //4, \$69.50)



You capture the broad sweep of a scene with the wide-angle lens. (35mm f/3.5, \$57.50)

EASTMAN KODAK COMPANY .

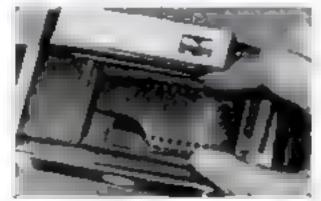
eam up with your hobby...



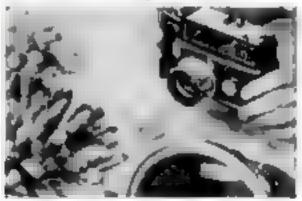
Want to shoot the moon? To team up your new Signet 80 with a telescope, write our Sales Service Division for "Astrophotography With Your Camera," Pamphlet C-20.



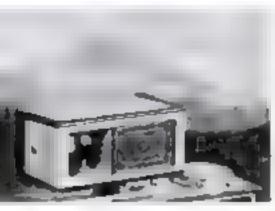
ear or far, you capture extra deil with Signet 80 care-elementan lenses. Superb for color.



You load film fast—drop it in, close the camera. You can do it with one hand, blindfold!



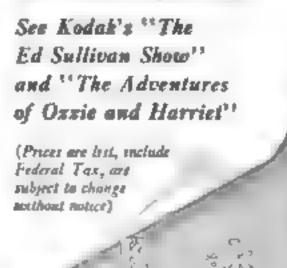
You can make ultra-close-up of specimens with low-cost Kodak Portra Lenses. Quick, casy.



ulti-Frame Finder tells instantly nich lens fits the scene best. 17.50)



You click off rapid-sequence shots with thumb-action lilen advance. Sets shutter too, counts shots.



ochester 4, N.Y.

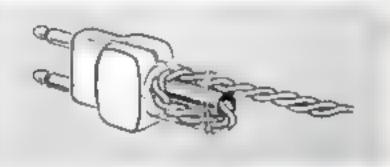


Movie Screen on Back of Picture

I MADE a movie screen out of a large picture on my living-room wall simply by backing the picture with a sheet of white cardboard.

When I show movies, I turn the face to the wall.— Harold Shanks, Hellis, N.Y.





Preserving Hearing-Aid Cord

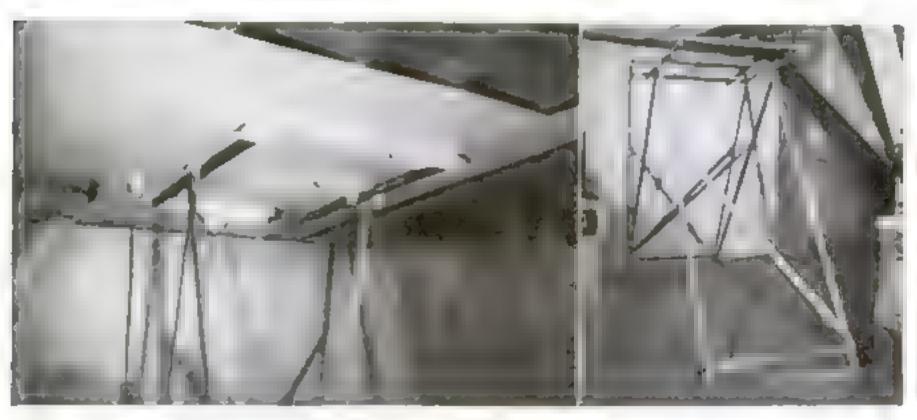
HERE's one way to keep a hearing-aid cord from breaking where it enters the plastic tube to the plug. Double it back and bind it in place with adhesive cellophane tape. The tape is more flexible than the tubing and won't cause wear.—

F. Leslie W hitaker, Lawrenceville, Ill.



Centering Blind Dowels

Solder the heads of metal thumbtacks together in pairs and you have good center markers for drilling holes for blind dowels. Spring-type clothespins make good soldering clamps. Clip the points to half their length before joining the heads.—Ken Murray, Colon, Mich.



One-Man Platform for Raising Ceiling Board

When you put up full-size ceiling board, you can hold it in nailing position without help on a frame like this. It is a 3'-by-4' open platform of 1"-by-2" rough strapping pivoted with stove bolts to a

folding frame. Make the legs slightly longer than the ceiling is high. Spread them to put a board on top, then push them together to raise it into place.—
C. A. Fenner, West Vancouver, Canada.

170 POPULAR SCIENCE SEPTEMBER 1959

SEDELL.

Home Improvement Supplement FALL 1959



New Working Plans for Improving Your Home







- How to Install
 Mural TV
- 4 How to Build a Bookshelf Desk
- 2 A Mower Port for Outdoor Storage
- 5 A Modern Way
- 3 Garage Catchall, a
 Problem Solver for Everyone
- 6 Two-Way Plumbing Wall for Rumpus Room
- 7 Bunk Bed That Hangs from the Ceiling

How to buy a new Armstrong ceiling and install it in any room in your home this week end



1. Right now-Look at your ceiling Is it cracked? Peeling? Imagine how beautiful the room would be with a new Arinstrong ceiling. Quiet, too. Armstrong ceilings soak up noise.



2. Friday—Go to your Armstrong Lumber or Building Materials Dealer. He's listed in the Yellow Pages under "Ceilings." He'll show you all the new Armstrong ceiling designs.



3. Seturday—Put up the ceiling yourself. Your dealer will show you everything you need to know. Just follow his simple step-by-step instructions. He'll even lead you a stapler.



4. Sunday—Relax in a home that will be Sunday quiet every day of the week. Your beautiful new Armstrong ceiling is washable, needs no painting, and will never crack or peel.

We'd like to send you a free booklet about Armstrong ceilings. Write Armstrong Cork Co., 99 Oak St., Lancaster, Pa

Armstrong CEILINGS

Soak up noise and give your home today's smart new look

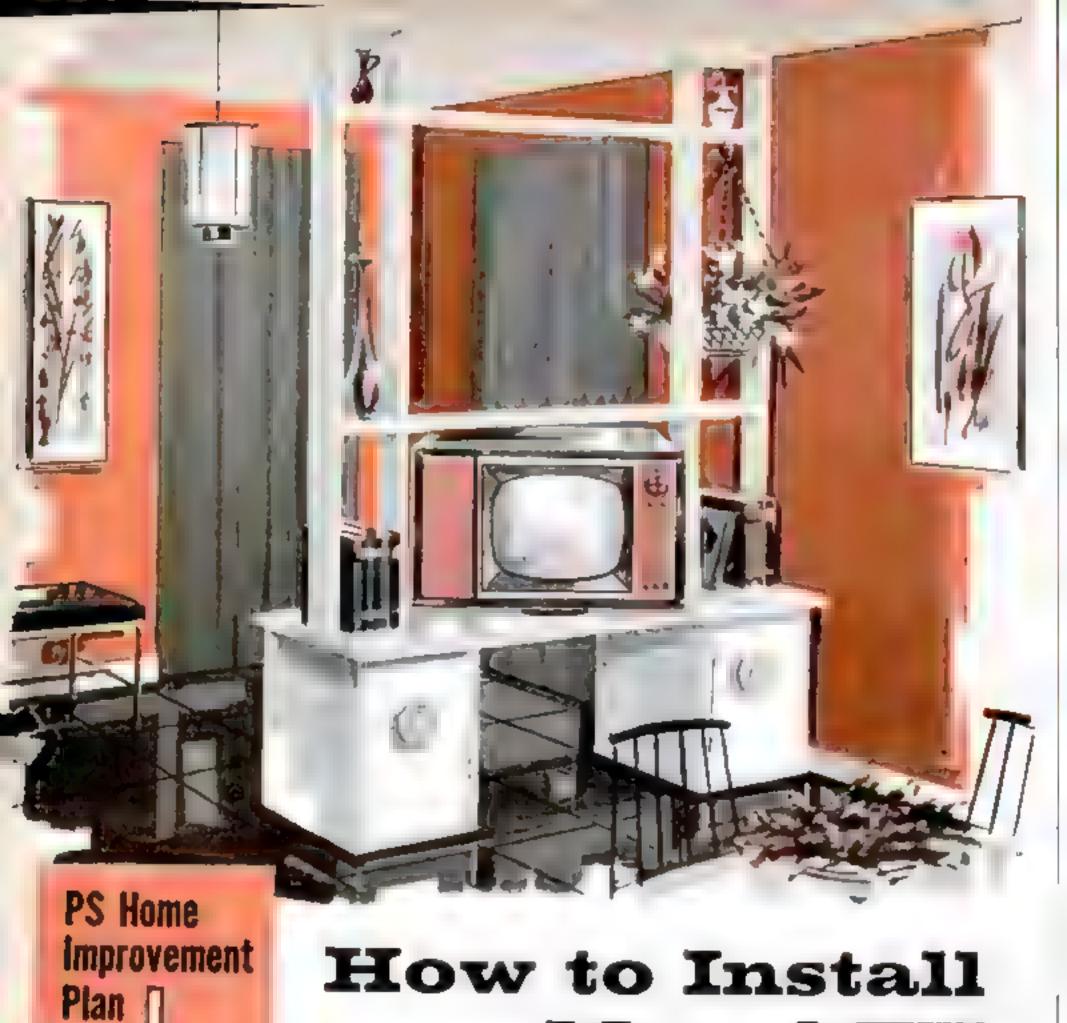
Best home improvement projects start at your local Lumber and Building Materials Dealer. He stands ready to supply you with a complete selection of tools, materials and advice. His years of experience are always at your service—from advising you on doing the job yourself . . . supplying you with plans . . . guiding you with financing hints . . . or helping you select a reliable hometown contractor. As part of a vast Fall Home Improvement Program originated by POPULAR SCIENCE and the NRLDA, your local dealer is ready to help you repair and remodel from roof to basement. When you think of home improvements think FIRST of your ONE STOP SHOPPING CENTER for home improvements—your neighborhood Lumber and Building Materials Dealer.

YOUR BUILDING SUPPLY DEALER

A ONE STOP SHOPPING CENTER FOR HOME IMPROVEMENT



National Retail Lumber Dealers Association 18th & M Streets N. W., Washington 6, D. C.





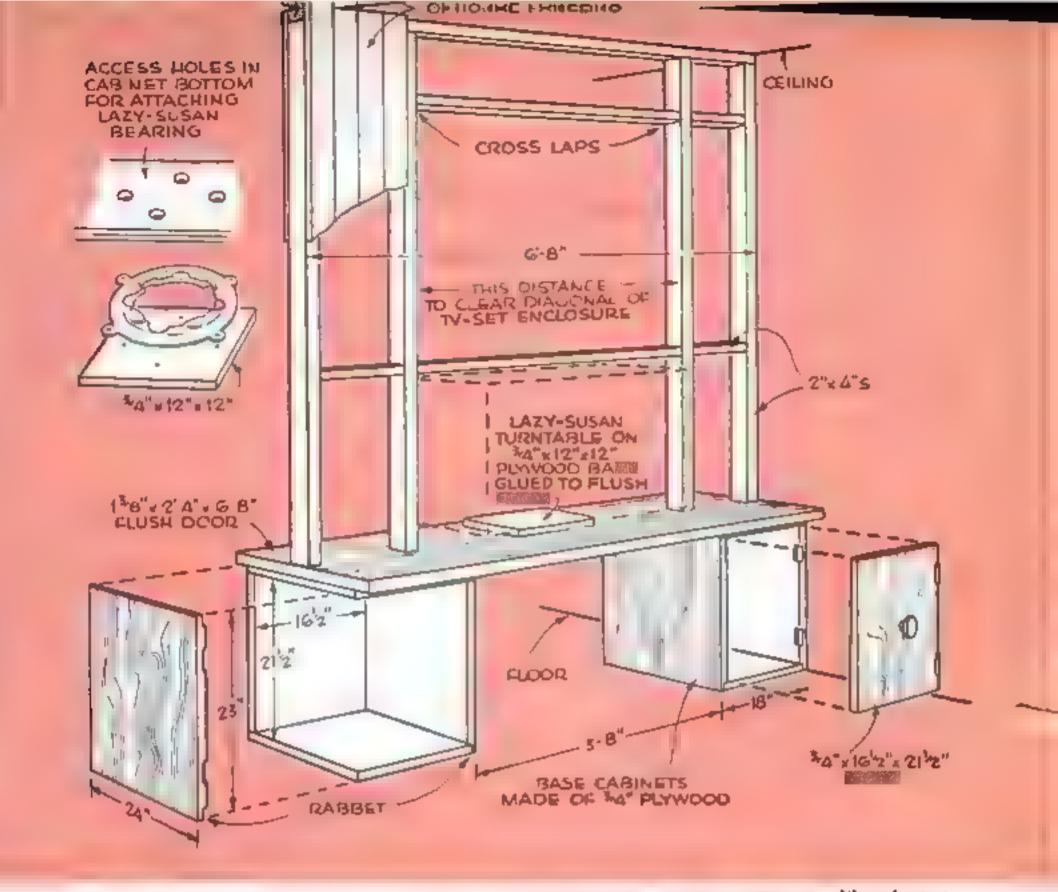
REMOVABLE PICTURE FRAME completes the installation of this color set in a living-room wall.

174 POPULAR SCIENCE HOME IMPROVEMENT SUPPLEMENT

I I OW'D you like to hang your TV picture on the wall? Although it may be several years before you can literally do that, with RCA's new line of "Mural-TV" sets you can easily get the same effect.

Mural TV

The obvious advantages of picture-onthe-wall TV have led many home owners to pay for expensive, custom-built installations. Now, however, a major manufacturer is offering complete packages at mass-production prices. They are designed to be built in without fuss about the electronics. You even have a choice



of ready-made picture frames to go with various decorating schemes. But you don't have to buy these if you prefer to make your own.

Four different receivers are available: a 17" black and white that is less than 12" deep, a standard 21" black and white, a 21" black and white with remote control, and a 21" color receiver. Speakers are optional extras. You can get an 8" extended-range speaker, or a two-way speaker system with two 3½" tweeters and an 8" extended-range. A detailed installation guide comes with each set.

Sets are enclosed in a protective steel housing with a safety covering for the picture-tube face. Out-in-front operating controls permit mounting the set flush with the wall.

Prices are only slightly higher than for the cheapest table model using an equivalent chassis. If you do the carpenmeet your needs. You may want to panel the upper part or leave it open, or use it free-standing or with one end attached to a wall. TV set swivels for best viewing from any place in the living room, or swings around to let you watch from the dining area. Pedestal cabinets can be ready-made unpainted furniture units.





UNUSED SPACE UNDER A STAIRWAY makes an ideal spot to build in a set. Usually the back

of this wall is accessible from the cellar stair, simplifying construction and ventilation.



CABINET SOLTED TO STUDS on a bedroom wall will house the slim 17" set. Mirror doors slide in

a single groove and may be pulled together in the center to hide set when it is not in use.



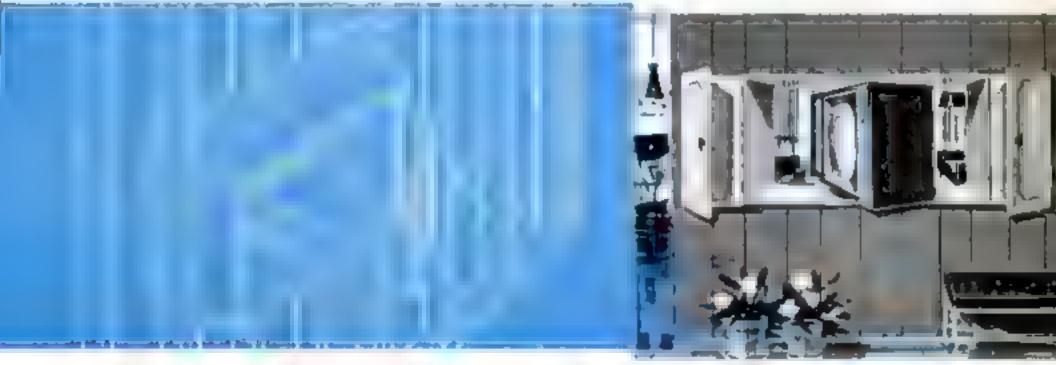
READY-MADE FRAMES providing front ventilation will let you build a set into a cabinet wall.

You get all the advantages of mural TV without need to cut into the structure of the house.



corner-catiner installation is a good alternative if you don't have a wall with suitable

space behind it. Opening at the floor and ceiling gives channey action for rear ventilation.



room and den lets you watch from either room.

Double-hinged doors on each side of the framed opening can be closed to conceal the unit.

try yourself or have it included when you build a new house, you can get TV performance equal to the most expensive console, plus the advantage of picture-on-the-wall TV, for little more than you'd pay for a conventional table model.

For those with an itch to own color TV who have been stopped by the high price tags, RCA says that some lending institutions are allowing the cost of built-in TV to be included in the mortgage on new houses.

WANT WORKING DRAWINGS? RCA will send you plans for the basic room-divider unit with the swiveling TV set. You can also get detailed installation guides for each set, as well as other suggestions and ideas for installing mural TV. Write to: Mural TV. Radio Corporation of America, Cherry Hill, Camden 8, N. J.



LAZY-SUSAN BEARING gives positive swiveling action. Access holes drilled in the panel to which it is first attached will let you reach the screws to fasten it to the second panel.



25 Complete 12 Volume Sets of Popular Science Do-It-Yourself Encyclopedias 50 Built-In Space Saver Books 50 One-Year Subscriptions to Popular Science

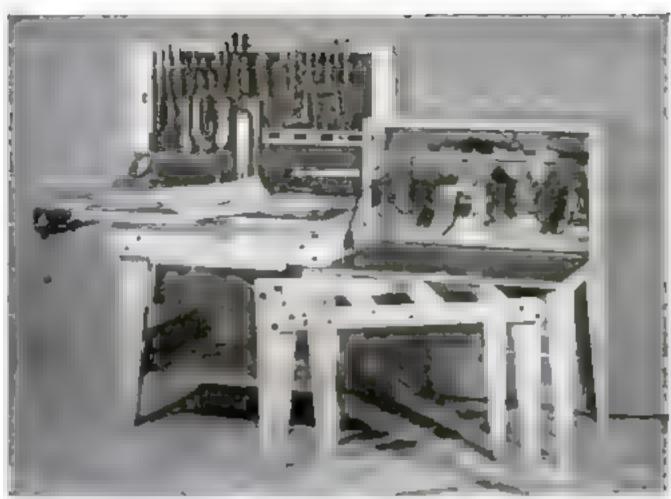
Here's a contest every Popular Science reader can enter. Everyone has a chance to WIN. All you have to do is complete the following statement in 50 words or less:

"I would like to win the Popular Science Split-Level Workbench because... activity contemplated.

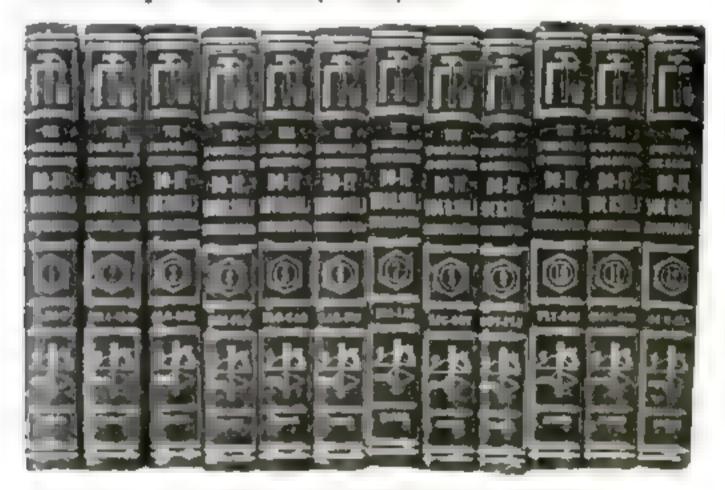








The Popular Science Split-Level Home Workbench—a new and revolutionary workbench design—the dream of every workshop owner!



Extra Prize Banus—Popular Science Do-It-Yourself Encyclopedias

Complete 12 volume sets of encyclopedias will be awarded to any 25 winners who enclose a sales slip along with their entry blank. To qualify for the extra prize, winners must purchase a product of advertisers appearing in the booklet featuring the entry blank . . . available at dealers shown on the following pages.

If your local Building Supply or Hardware dealer does not have an entry blank booklet ... mail name and address to Popular Science, Dept. 1106, 355 Lexington Avenue, New York, New York for your entry blank.

All entries must be postmarked by midnight October 31, 1959. In case of tie, doplicate prizes will be owneded. All entries will be judged by Popular Science editors.

SEE YOUR DEALER FOR YOUR ENTRY BLANK

HOME IMPROVEMENT ISSUE SEE THESE DEALERS FOR YOUR ENTRY BLANK

EXCIPORMIN

Hammond Lumber Company 205 East Huntington Drive Arcadia, California ,

Hammond Lumber Company 16307 South Belfiower Blvd Bellfiower, California

Williams Lumber Company 17159 South Lakewood Bivd. Belfower Caufornia

R. G Hacox Lumber Co 2837 Shattuck Avenue Berkeley, California

San Ramon Valley Mill & Lumber Co. 183 North Harts Avenue Danvalo, California

Haramond Lumber Company 8791 Sterra Way Fontana, California

Latham Woods Lumber Co 14317 South Western Avenue Gardens, Conforms

Hermosa Lumber Company 1101 Pier Avenue Hermosa Beach, California

Lounsborry & Harris Lumber Co. 6641 Santa Monica Bivd. Hollywood 38, California

Harris Lumber Company 225 North La Bres Inglewood, California

Rossman Mill & Lumber Co., Ltd. 6980 Cherry Avenue Long Beach, California

Hull Brothers Lumber Company 8635 Melrote Avenue Los Angeles 46 California

Hyde Park Lumber Company 6722 Crenshaw Blvd. Los Angeles 43. Cal fornia

B'ue Star Lumber Company 3204 Tweedy Blvd. Lynwood, California

Hammond Lumber Company 5361 Tujunga Avenue North Hollywood, California

Palisades Lumber & Materials 864 Swarthmore Avenue Pacific Palisades California

Hammond Lumber Company 110 South Arroyo Perkwey Pasadena, California

Hammond Lumber Company 516 Main Street Vehice California

Hammond Lumber Company 13872 Harbor Boulevard West Santa Ana. California

Van Nuys Plywood 23007 Ventura Blvd Woodland Hills, California

COLORADO

Building Materials Center 2700 East Pourth Street P. O. Box 1547 Pueblo, Colorado

CONNECTICUT

MacFarlane Lumber Company, Inc. Cus ity Bunding Material 226 Pearl Street Torrington, Connecticut

IDAHO

McLe land Lumber Co. 804 North 5th Pocatello, Idaho

RUNOIS

Edward Hines Lumber Co 200 South Michigan Avenue Chicago 4, Illinois

M S Carver Lumber Co 603 East War Memorial Drive Peoria, Illinois

INDIANA

Charles H. ker & Sons. Inc 1400 East Berry Street Fort Wayne, Indiana

Central L. & M Supply Co., Inc Cincinnati Street & Pennsylvania RR P O Box (18 Franklig, Indiana

Ridge Lumber & Supply Co. 100 East 40th Avenue Gary Indiana

IOWA

Farmers Lumber Co. 1619 15th Street Rock Valley, lows

KANSAS

Davis Lumber & Hardware 733 East First Street Hutchinson Langue

Hodges Russes

OF BUILDING

J B B Lanton Co. Inc. 101 East Main Street Frankfort Kentucky

LOUISIANA

Central Lumber Co. Inc 1267 Chectaw Road P O Box 967 Baton Rouge 1. Louistana

Raftery s Hardware & Paint Stores 3063 Domaine Street New Orleans, Louislana

Raftery's Hardware & Paint Stores 5278 Gen Diaz Now Orleans, Louisians

Southern Hardware & Lumber Co., Inc. 407 North Broad New Orleans, Louisians

MAINI

Passmore Lumber Co., Inc. Camden, Maine

MARTLAND

The Nuttle Lumber & Coal 7th & Lincoln Streets Denton, Maryland

MASSACHUSETTS

Wood, Inc 75 Crescent Street Wordster Mass.

MICHIGAN

V E. Tronel & Sons. Inc. 18 Angoli Street Battle Creek, Michigan

Nowles Lumber Company 156 West Main Street Benton Harbor, Michigan

Babcock Boyre Gahen, Michigan

South Side Lumber Company 2033 Portage Street Kalamasoo, Michigan Lake Street Lumber Co. 1702 Lake Street Kalamazop, Michigan

Security Save-Way Lumber and Supply Company 1337 King Highway Kalamazoo, Michigan

North Lumber Company 447 Portage Street Kalamazoo M,chigan

Home Lumber & Supply Co. 6 I Wayne Street Niles, Michigan

Williams Supply Co. 915 South Fifteenth Street Nilse, Michigan

Saginaw Lumber Co 319 McCoskry Street Saginaw Michigan

Three Oaks Lumber & Coal Co 2 South E.m. Street Three Oaks, Michigan

Unionville Lumber Company 1325 Phe pr Street Unionville, Michigan

MISSOURI

Cash Bargain Lumber Co 6801 Truman Road Kansas City, Missouri

ERAPIA

Field-Birge Company 101 West Front Street North Platte Nebraska

Sock Lumber Company Ord Nabraska

NEW JERSEY

Aliendale Coal & Lumber Co. 55 Park Avenue Aliendale, New Jersey

John J Demarcat Inc Naug e Pare Closter New Jersey

The Handyman a Shoppe Route 46 (orner B vd East Petterson, New Jersey

Cooper Lumber Company Highway 17 Union Avenue East Rutherford, New Jersey

Van Ness Lumber Company Newark-Pompton Tumpike Pequannock, New Jersey

Kings Lumber Company 256 Belvedars Avenue Washington, New Jersey

NEW YORK

Phillips Hardware 84 South Pearl Street Albany 7, New York

Bethpage Lumber & Supply Corp. 4100 Hempstead Tpke Bethpage, L. L. New York

Tulnoy Lumber Company 17 Ridgewood Place Brooklyn 27, New York

Smith Electric Company Inc. 113 Remsen Street Cohoes, New York

Delmar Lumber & Builders Supply Inc 340 Delma re Avenue Delmar New York

Baker Lumber Co.
Dryden, New York
CONTINUED ON PAGE 274

BUY FROM THESE DEALERS



beautiful wood-grain paneling you can install yourself!

You can add extra luxury to any room with new Marlite Random Plank. The 10-inch-wide planks with modern rodorn grooves are eight feet long, 1/4-inch thick - ter, in d and grooved for easy its mation. Six new Trendwood hues (Danish Birch, English Oak, Swedish Cherry, Italian Cherry, Swiss Walnut, American Walnut) capture the beauty of fine hardwoods. And Marlite's baked melamine plastic finish requires no painting or further protection, resists stains and mars, cleans with a damp cloth. See your building materials dealer, or mail coupon below.

Tongued and grooved Random Plank goes up fast over furring strips or existing walls. Planks for a 12' x 8' wall cost as little as \$52!

Marlite

plastic-finished paneling

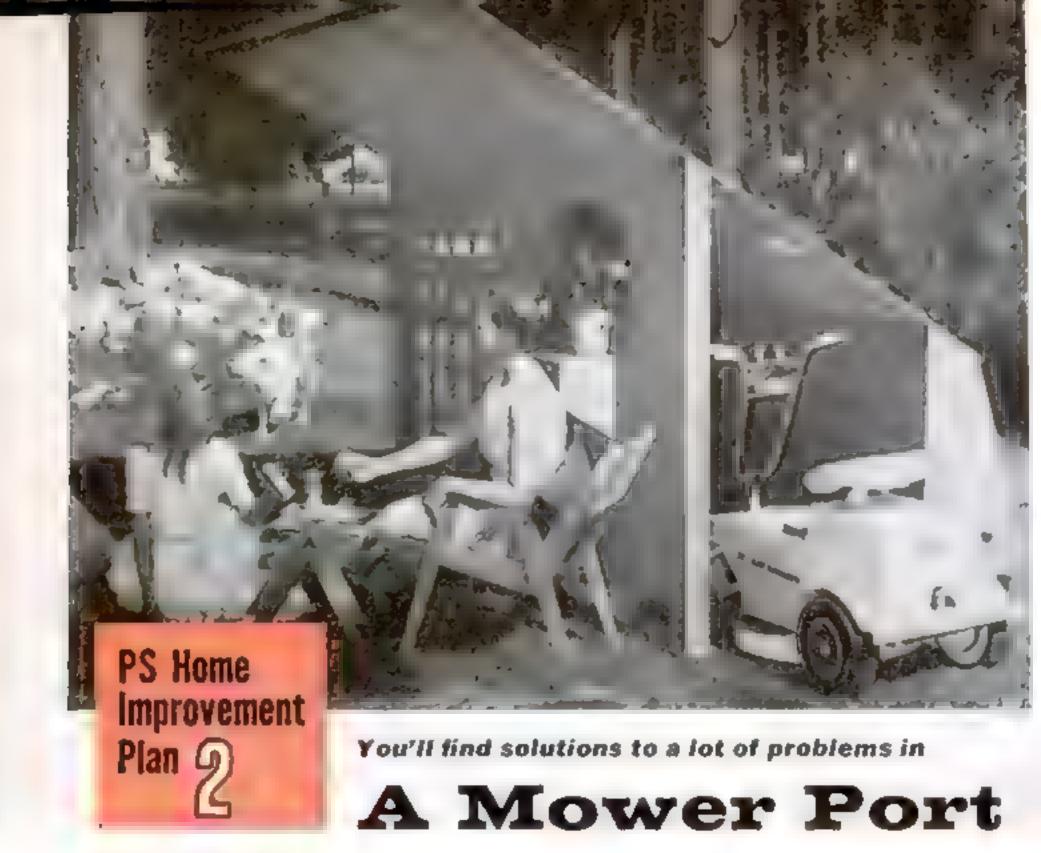
Martite Division	φf	Masonita	Corporation
Dept. 925, Dove	r_{i}	Ohio	

FREEL Please send full-color folder and do-it-yourself instructions on new Markte Random Plank.

Name____

Address_____

ANOTHER QUALITY PRODUCT OF MASONITE' RESEARCH



RibinG mowers are trundling around all over America But for many people, the wonderful little machines present a storage problem. They shouldn't, however, when it's possible to build this handsome, sturdy and manyways-useful mower port in a weekend. It'll cost not much more than \$100 for materials.

More than just a shelter, it's a whole garden-control center, with room for all the yard-grooming equipment that's now cluttering up your garage, carport or basement. Here's what it offers

• A shelter eight feet long, three feet wide, and from three to five high for your mower or a midget tractor. Room to spare for a wheelbarrow, and the youngsters' bikes and scooters. You can enter the port from either end—no maneuvering to haul out the rig you want.

 A broad expanse of interior wall on which to hang rakes, hoes, shovels and

COLON 41
CLAPBOARDS AND
CHECKERE PR

182 POPULAR SCIENCE HOME IMPROVEMENT SUPPLEMENT

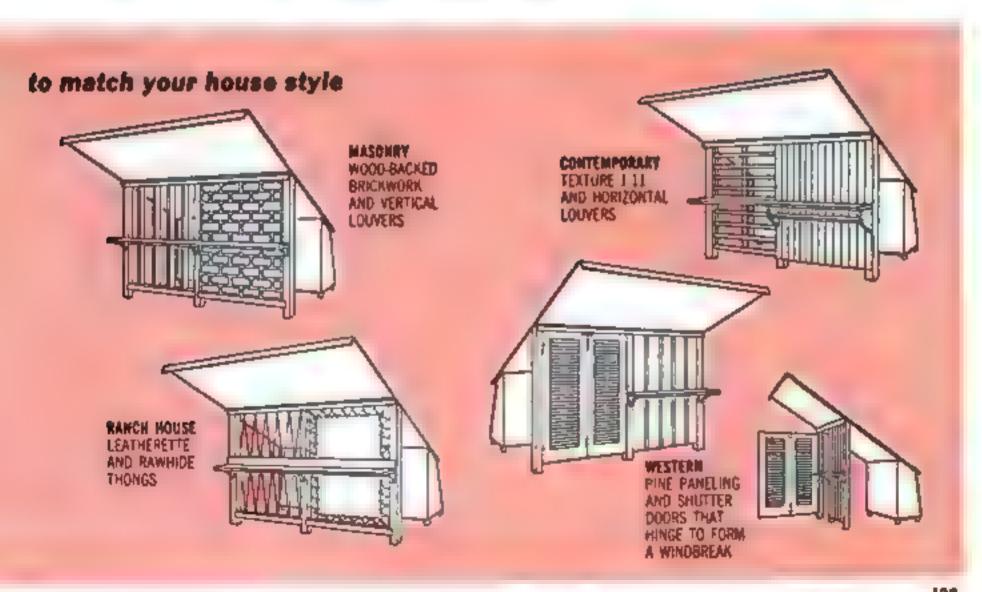


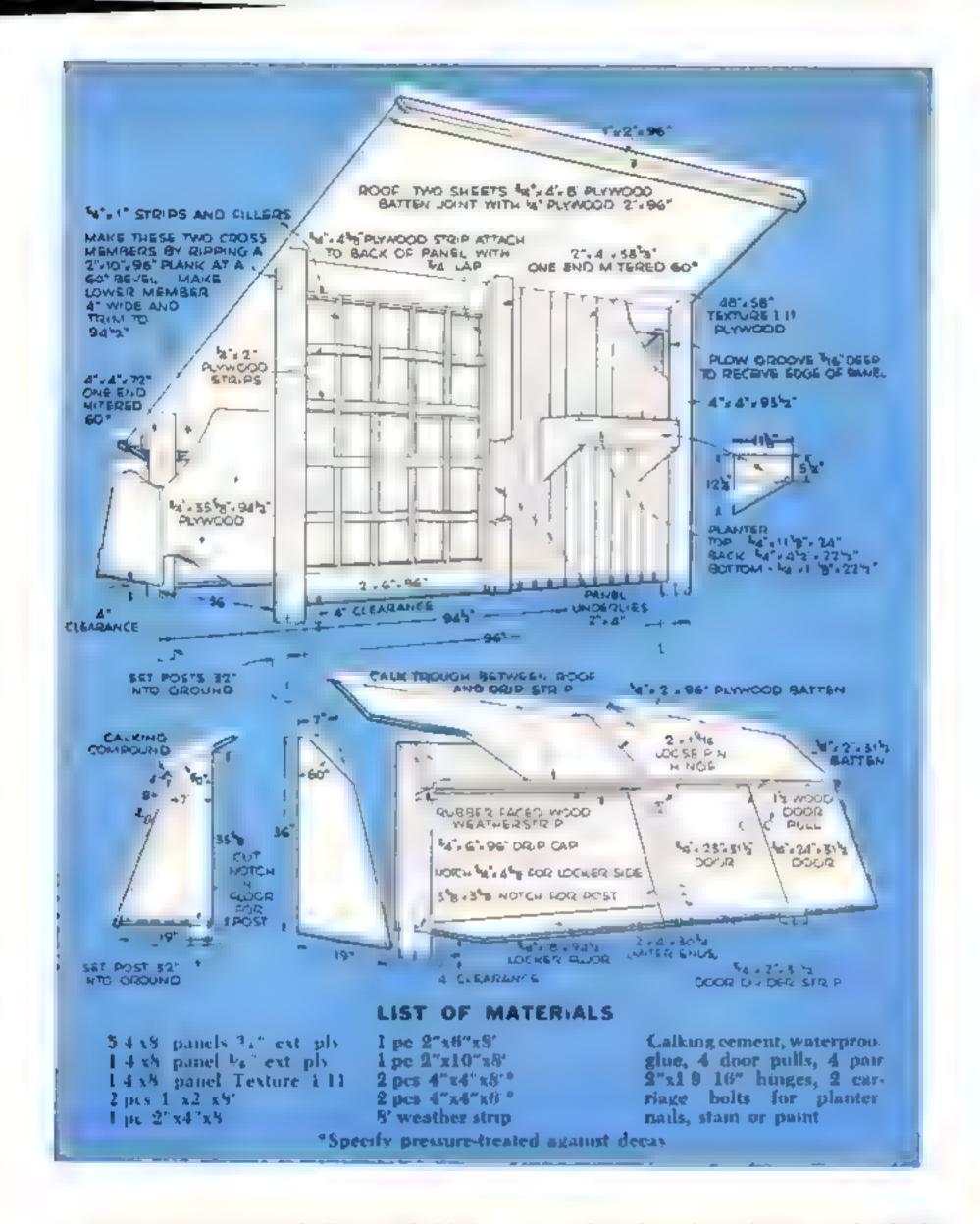
MOWER PORT has space for tools ordinarily cluttering the garage, plus shelter for puttering with plants—and shade for sheer loating

WEATHERPROOF LOCKER stores smaller gardening gear near point of use, permits flammable mover fuel to be moved away from boose



for Outdoor Storage





that ever-troublesome, bulky stepladder.

• A storage locker nearly eight feet long. Easy to get at, because its four big doors are on the outside of the port. This is the place to tuck away small garden tools, hose, fertilizer, and insecticides. A safe place, too, for motor fuel, paint and other flammables. Everything's out of sight—and the weather.

 A broad roof overhang on the high side of the shed, providing shade and wind protection for lounging.

A solid exterior wall section supporting a work shelf for potting and mixing, combined with a latticework area. Or, if you prefer, all wall, or all latticework. With further slight modifications you can make the mower port conform with



INTERIOR: One cost REZ COLOR-TONE . . . well brushed out . . . over previously Clear REZ sealed surface. Finish with final coat pale, clear SATIN-WOOD REZ. Sand lightly between coats.

EXTERIOR: Just two well brushed out coats of REZ COLOR TONES on bare wood will seel, color and protect. Use Clear REZITE for additional protection.





CLEAR SEALER & PRIMER

Developed as the ideal sealer and primer for all new wood. REZ SEALER equalizes the porosity of hard and soft grain areas, speeds painting or staining by preventing the wood from blotting up the first coat, and insures handsome uniform luxury finishes without excessive dark color areas. or "splotches" due to unequal penetration.



13 **REZ COLOR-TONES**

for modern and beautiful color finishes on exterior and interior wood.

REZ Color-Toned sealers are the ensiest, most economical, most richty beautiful finishes for siding, garages, carports, fences, garden furniture, etc. Just one coat for interiors or two coats for axteriors seel and color, and the wood is protected against weather, sunlight, changing humidity, rain, sizet, snow! REZ Color-Toned sealed wood retains natural grain pattern.

For name of your nearest dealer, consult the YELLOW PAGES of your telephone directory.

SEND TODAY for this valuable 56-page PART OF YOUR HOME." It tells how to get all kinds of interesting wood finishes. Includes 35 plans for outdoor furniture, tences, wall paneling, built-ins, and room dividers. Illustrates ways to convert your basement into livable space

Mail to:	REZ WOOD-TONES, INC. Dept. 28. P. O. Box 123 Springdale, Pennsylvania
l enclose WOOD A	502 for your 56-page boo BEAUTIFUL PART OF YO

RZ-15

N "HOW TO MAKE

ZONE	STATE	
	ZONE	ZONE STATE



RIPPING TWO-BY-TEN at 60° bevel makes both top pieces. Lower one s broad face should be 4" wide; make sure the members are level.



PRIP CAP is mailed to both bottom edge of door frame and roof. Rubber-edged weather strip keeps rain from entering behind doors.

Construction tips. For economy and simplified construction, the mower port is built entirely of

construction, the mower port is built entirely of standard lumber and big sheets of fir plywood, exterior type. Precutting the parts will save you a substantial amount of time.

The perspective plans give you all the dimensions and details needed for assembly. But here

are additional pointers:

• When you plow the 7/16"-by-7/16" groove in one of the forward posts to accommodate one edge of the Texture 1-11 plywood, place it 1/4" back from the notches for the horizontal framing pieces. You must do this because the edges of the panel are lipped. Test to make sure it will accommodate the narrower lip. Rip the wider lip off the other edge.

Use waterproof glue for all joints. This will

make the structure materially stronger.

 Note that the drip cap is slightly angled in relation to the top edges of the doors. When hanging the doors, place them so they wedge very slightly against the underside of the cap when they're in closed position.

 Space out the lattice strips equally. No dimensions are given in the plan because variances in the true widths of the framing members

could throw them off.

 Fill the trough between the roof and drip cap with calking compound after the wood has been sealed or prime coated. Most types of calk-



FOGE STRIPS for basketweave latticework are formed by nailing a 1½" strip of ¾" ply to back of panel with half the width exposed. At left, a ¾"-square strip is nailed to post.



FILLER SLOCKS nailed to horizontal framing members prevent upright strips from twisting when horizontals are woven. Give yourself room to slip in horizontals before spacing.

Exclusive features never before offered!

ALL-NEW IN EVERY WAY





NEW Exclusive ROTO-GRIP



NEW Weldwood® Lebenez Drop-lest Table



NEW Use of low-cost right hand tools



NEW Totally-enclosed direct-drive motor



NEW Exclusive new



NEW Safety "CAM" Key Switch, built-in

Go to your nearest DeWalt dealer and see a free demonstration of DeWalt's great new Model 925. It's loaded with Extra VALUE features you've been waiting for! You can own this incomparable new DeWalt with all its exclusive features at no extra cost. See it now!

LOW BUDGET TERMS EVERYWHERE!

as low as \$2.50 per week

*T. M. DeWelt Division

Tratent Fending

			A CONTRACTOR OF STREET	
DeWALT.	, Dept.	PH-10,	Lancaster, Pa.	

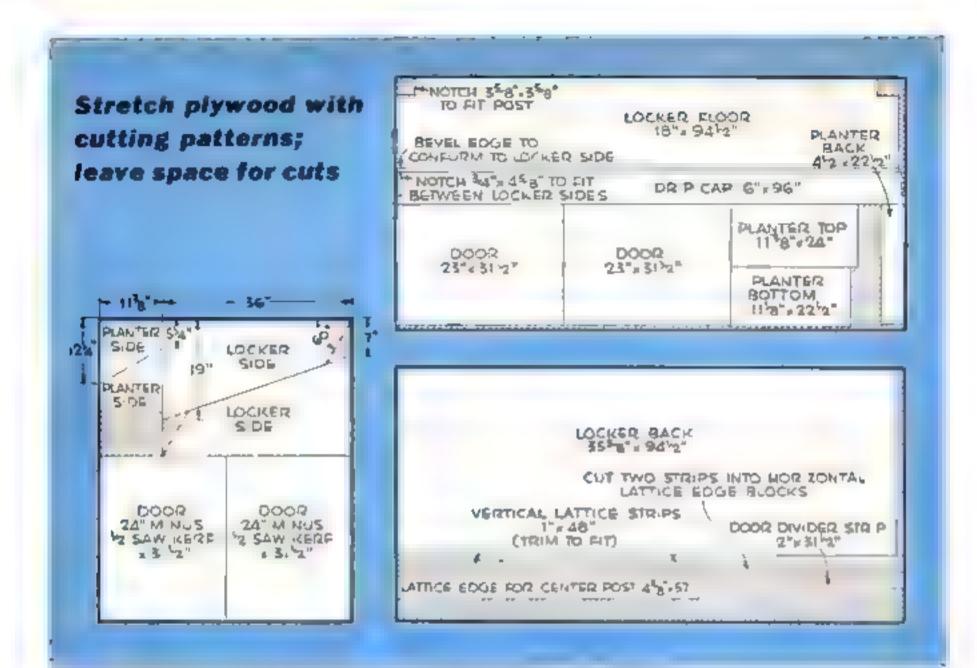
- Please send me FREE CATALDG of the new DeWALT POWER SHOP
- Send name of my nearest DeWALT dealer.

Name

Address.

City___

State.



ing stand up better when used this way.

• For weather protection, as well as good looks, paint or stain the port. If you use paint (perhaps to match your house), begin with a prime coat in the usual way. If you apply stain, choose a heavy-bodied type; a thin one won't give the wood enough protection.

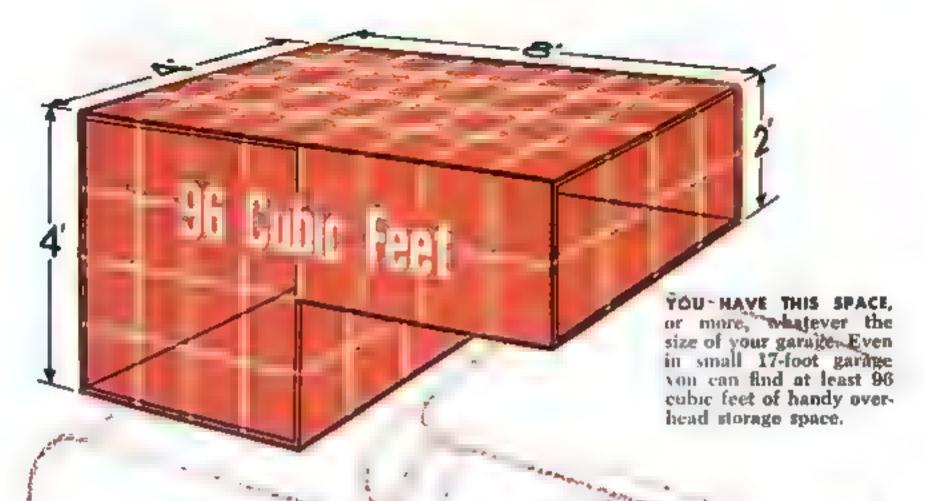
THE DOUGLAS FIR PLYN OOD ASSOCIA-TION has added this mower port to its latest list of plans. If you like the convenience of working from such a separate plan, send a postcard asking for free plans to build the mower port. Address it to Douglas Fir Plywood Association, Tacoma 2, Wash.



SHORT SECTION OF TWO-BY-FOUR, with narrower plywood strip above it, forms the central door hanger. Fill the trough between roof edge and drip cap with calking compound.

strip on one door overlaps other of pair to keep out rain. Doors close against rubber edge of weather-stripping door stop.

88 POPULAR SCIENCE HOME IMPROVEMENT SUPPLEMENT



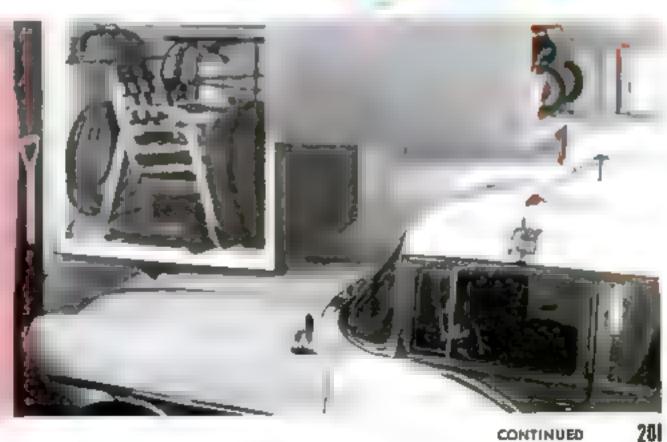
arage Catchall a problem solver for everyon?

HRONIC garage clutter induced by off-season storage gets a quick cure with this catchall bin. By making use of waste space above the car, in effect it enlarges the garage.

The big storage bin fits above the hood and back over the car to the garage-



OFF-SEASON STORAGE m a bin like this makes lots of sense. You need get at it only twice a year. The photo shows a catchall of minimum size, 96 cubic feet, over hood and top of car.



door track. Here you can find 96 cubic feet of storage area even in the smallest garage—one 17' long with an 8' ceiling.

This isn't easily accessible space, but it's made to order for seasonal stuff. In the fall, your lawn chairs, sports gear, screens and garden equipment disappear inside its sturdy, covered frame—out of the way and out of the weather. Next spring, it'll handle summer storage of storm sash, snow tires, and sieds.

The perforated skin provides storage space, too. On it you can hang a small stepladder or tools that are used through all the seasons.

With the car in the garage, check the space against dimensions given in the plans, and don't be greedy. Leave generous clearances over the bood and top of the car, and in front of the windshield to allow for a bouncy stop. If the carradio antenna is on the right side, check its height in the down position and figure it in your plans. On the left side, the antenna is safe, since the catchall doesn't cover the full width of the car (to provide head clearance when you step out).

Consider the garage light, too. If its location seriously shortens the over-the-car portion of the catchall, you'll have to move it, perhaps under the bin.

Begin the frame by joining the top 2"by-2" stringers and cross members. Because of its L shape, the catchall had best be built upside down. This way its top can lie flat on the floor. Add the uprights, joining them to the stringers with paired 3" #12 wood screws offset just enough to clear each other at right angles.

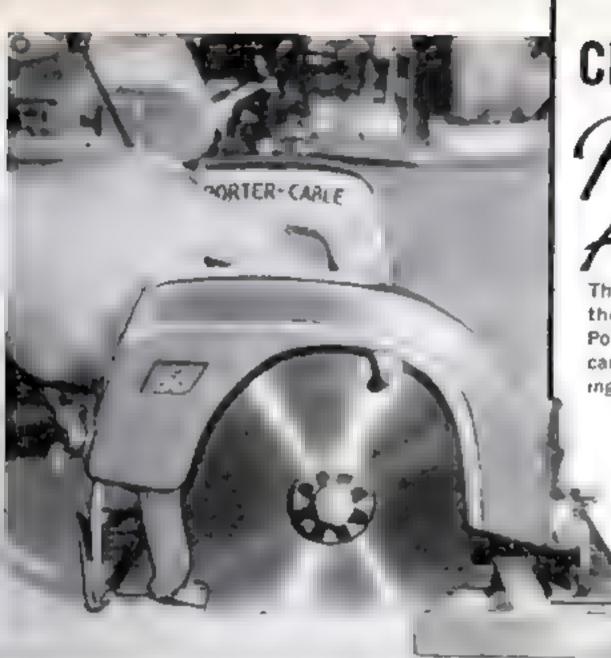
When completed, the frame may appear flimsy for all you plan to store in it. But the secret of its great strength lies in the airplane-type construction—light framing and stressed skin. The skin of the catchall is a sheet of 1/4" tempered hardboard. The perforated type is used on the sides to provide holes for wire hangers. The bottom skin is smooth unperforated hardboard for easy sliding of items stored out of easy reach. Fasten the hardboard to the frame with 1" #12 roundhead wood screws, spacing them four to six inches apart for maximum load distribution. Drive screws through to intermediate uprights as well as at the ends of the panels to add to the overall rigidity. Space deck screws 6" apart.

Spike 2"-by-4" cleats to the wall studs to support the end and side of the catchall. You are then ready to attach the bin permanently to the ceiling joists. Drill through the outer top stringer and cross members for \(\frac{1}{4}\)"-by-3\(\frac{1}{2}\)" lag bolts. A washer under each bolt head will keep it from chewing into the wood. Drive lag bolts through the lower stringers into the wall stude for extra rigidity.



IN A 20-FOOT GARAGE, you can install a catchall of this size, 120 cubic feet, if the ceiling is at

least 8' high. Stressed-skin principle gives heavyload carrying capacity to light frame.



CIRCULAR SAWS

Power-Plus Accuracy!

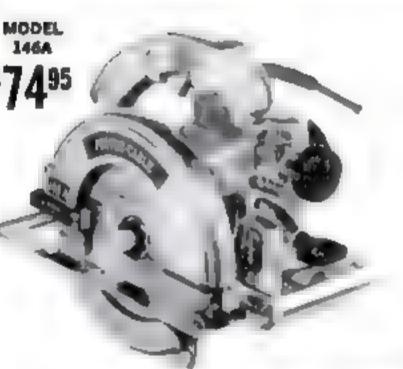
This 6½" Saw is loaded with many of the exclusive features found on Porter-Cable professional models. You can make every possible cut, including 45° angles on 2 x 4's! Has instant depth and bevel adjustments...self-lubricating bearings...weighs only 8½ lbs.

A 3-STAR TOOL

Safety Kickproof Clutch
"No-Drag" Telescoping Guard
Cuts 2 x 4's at 45"

MODEL.

Only \$3Q95



6½" Heavy-Duty Porter-Cable Saw. Here is a professional saw at a low price. It's light in weight yet a powerhouse. Carpenters pick this model every time for speed and accuracy of cut!

A 5-STAR TOOL

- Real bearings throughout
- * Exclusive gear lubricator
- * Safety Kickproof Clutch
- ★ Blower Clears Line as Cut
- ★ Calibrated Depth, Bevel Sets

Limited offer! Order your saw now!

Send no money! Take 6 months to pay!

Porter-Cable

Quality Power Tools

PORTER-CABLE MACHINE COMPANY 9159 Mercellus Street, Syrucuse 4, N.Y. Porter-Cable Machine Co., 9159 Marcellus Street Syracuse 4, N. Y.

I wish to order the tools checked below. I agree to pay my Porter-Cable Dealer full price or down payment indicated upon receipt of tool, and the balance in monthly installments shown below.

Price

Down Payment

Balance Monthly for & months

Model 66 Saw

\$39.95

10- 3-1

\$8.00

\$5.50*

Model 146A Saw

\$74.95

\$18.75

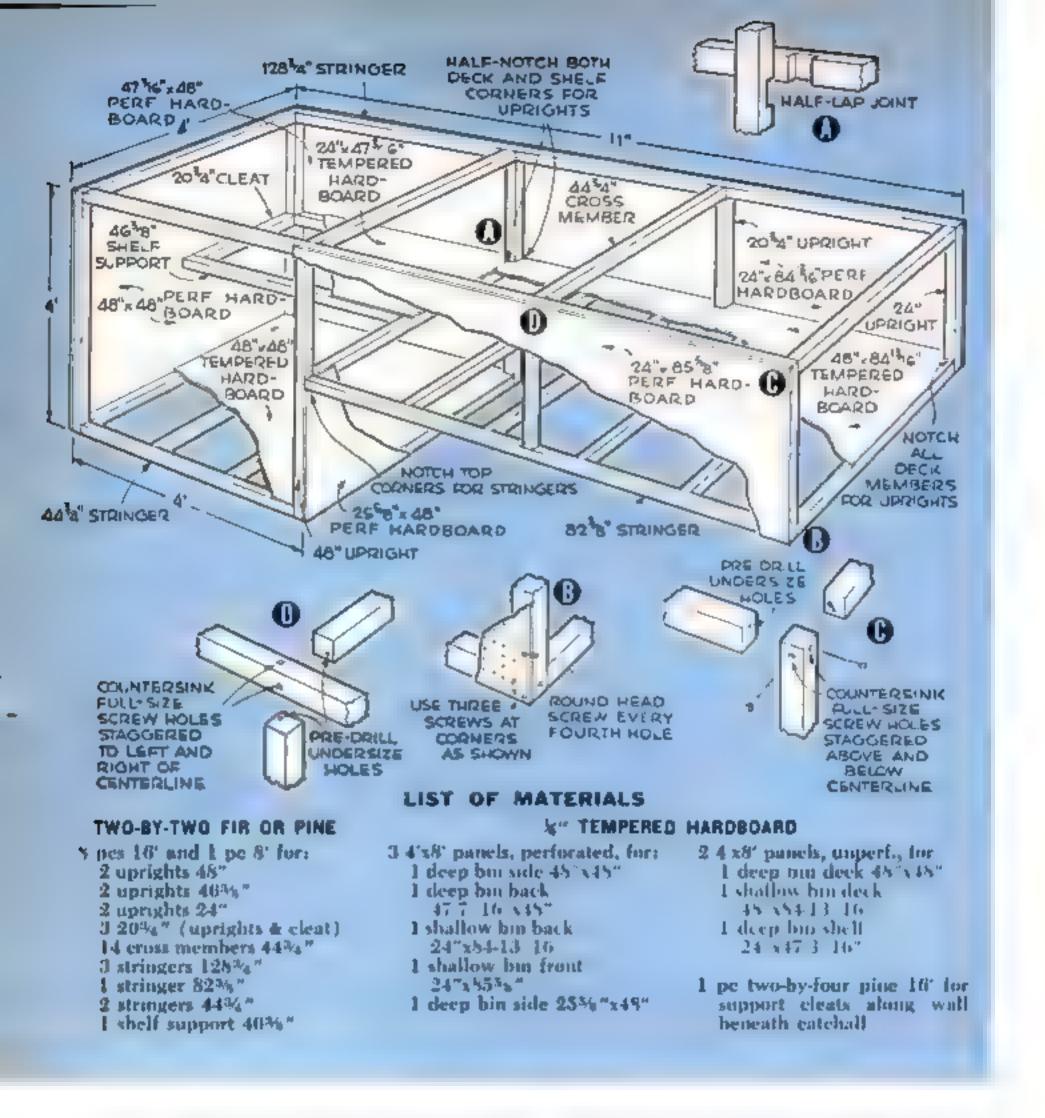
\$9.95*

"includes service charge

Name_

Address_

City & State_

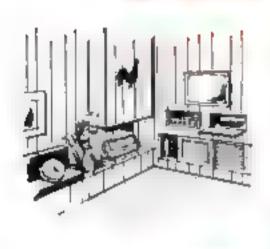


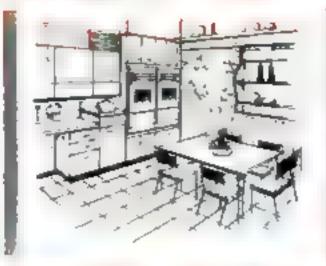
The sketch above gives dimensions for a catchall in an average 20-foot garage with an 8' ceiling. For a higher ceiling, adjust the vertical dimensions upward to use the extra space. As shown, the catchall has no top covering since it's designed for attachment directly to ceiling or joists. If a top surface is desired, use \frac{1}{4}" tempered hardboard and install 2"-by-2" cross members spaced about 15" apart.

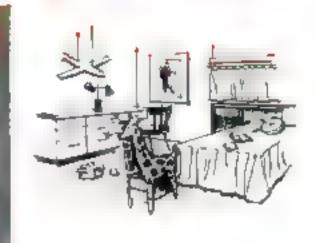
If you plan to store extra-heavy loads in the bin, you may want to consider beefing it up. Here's how: Apply flat corner braces to all frame joints over the hardboard with screws passing through both into the stringers. Then run joist-supported metal strapping under the shallow section of the bin.

THE MASONITE CORPORATION has added this garage catchall storage bin to its list of project plans. If you like the convenience of scorking with separate plans, send a post-card asking for the free garage catchall plans, Address: Musonite Home Service Bureau, 111 N. A subington Street, Chicago 2, 111.

EASY TO AFFORD ...







the things you've always wanted!



Mark 5

Any room of your house . . . every member of the family . . . will benefit from Dad's new SHOPSMITH. Home-fixing . from simple tables to intricate cabinetry . . . is money-saving with this quality multi-purpose tool. Amazingly versatile, SHOPSMITH—at ¹3 the cost—does everything AND MORE than a shop full of single-purpose power tools!

SHOPSMITH is the practical power tool for novice or craftsman, proved by well over a quarter-million owners. See your nearest SHOPSMITH dealer, Montgomery Ward store or write Dept. SPS-9 for literature.

SHOPSMITH

makes a wanderful gift
...is a wanderful
gift-maker!

NOW! Complete Shap in T Tool for only \$299.50







Herizontal Drill



161/2" Vertical Drill Press

Manufacturer of YARDSMITH .. outdoor partner to world-famous SHOPSMITH

YUBA POWER PRODUCTS, INC.

800 EVANS ST., CINCINNATI 4, OHIO

A Subsidiary of

YUBA CONSOLIDATED INDUSTRIES, INC.





Shrink Dowels for Best Fit

If powers are too snug, shrink them a bit an hour before use by warming them on a bottom-up iron at low heat; or put them in a box with a lighted bulb. Then they'll slide home easily, later expanding to a tight fit as they absorb glue.



Pipe Holds Garbage Cans

This garbage-can holder keeps cans from being tipped by animals, children, or wind. By keeping cans off the ground, it prevents rusting. The stand is made of one-inch pipe, embedded in concrete. Heavy steel strap bolted to the pipe makes hook for handle, keeps cans from swinging. Covers can be attached to the pipe with a short piece of light chain.



Washers Level Furniture

WHEN a chair or table fitted with furniture rests of plastic develops webble from a short leg, level it the easy way. Just remove the furniture rest—it pulls out—and slip a small washer or two over the nail before replacing it.

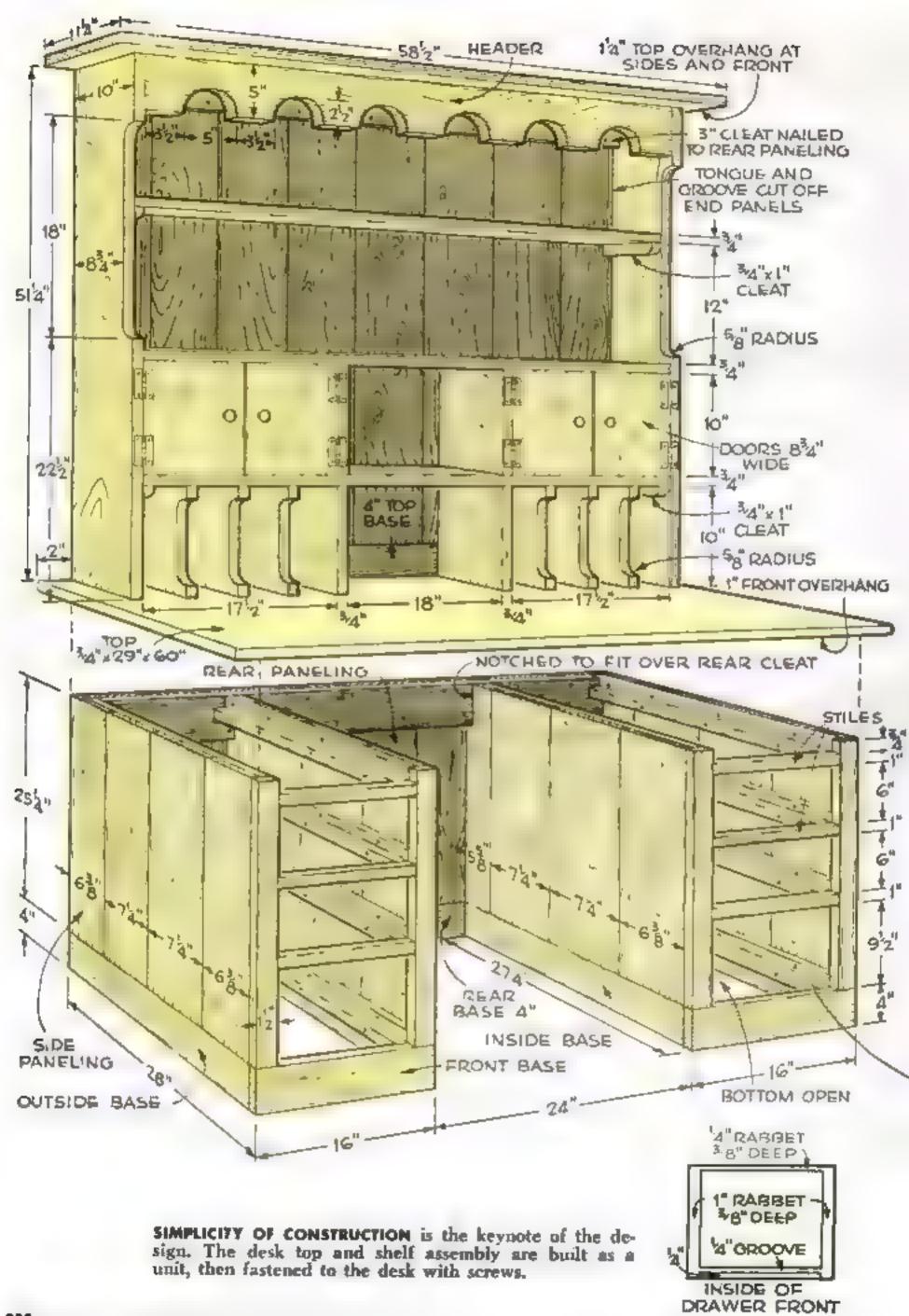
Downspout Makes Durable Lamp Post

THREE-INCH fluted downspouting makes attractive and durable lamp posts that fit most lamps' mounting sockets For extra strength. fill the pipe with concrete and set it in cement extending below frost line. Electrical cable may be imbedded directly in cement filler, though some local codes may call for conduit.



206 POPULAR SCIENCE HOME IMPROVEMENT SUPPLEMENT



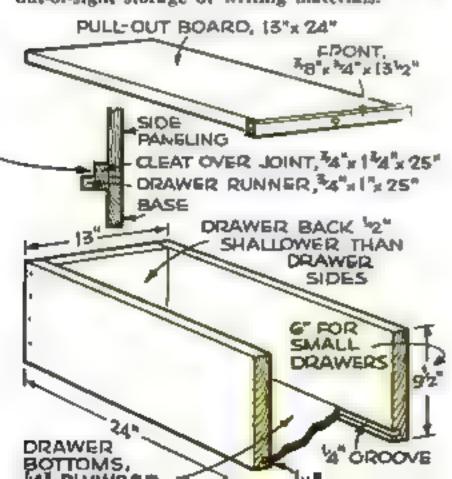


HOW TO BUILD A Bookshelf Desk

PS Home Improvement Plan /



SHOWN DISPLAYING CHINA, this handsome piece of furniture has room for a small library, too. Two partitions are enclosed with doors for out-of-sight storage of writing materials.



LEATS and nails hold this massive bookshelf desk together. There isn't a single cabinetmaker's joint in it. The illusion of fine craftsmanship is created by the slip-together tongueand-groove paneling used on the sides and back.

The bookshelf desk was designed with ease of construction and flexibility in mind. Its styling will fit several furniture periods. It can be built as a freestanding unit, or as a built-in to fill an

LIST OF MATERIALS

I" lumber (44" actual thickness):

UPPER PART

2 pcs 10"x51¼" sides

8 pcs 1"x8" paneling, 47¼" rear panel

I pc 1114"x581/2" top

I pe 8"x541/2" upper shelf

2 pcs 9¼"x54½" lower shelves 10 pcs 9¼"x10" dividers

I pc 5"x541/2" header

1 pc 3"x54½" rear-panel cleat

1 pc 4"x54½" base for rear panel

4 pes 844 "x10" doors

2 pes 1"x724" cleats upper shelf

4 pes 1"x81/4" cleats for lower shelves

LOWER PART

24 pcs 1"x8" paneling, 25¼ " sides

and rear

16 pcs 1¾ "x25" cleats

16 pes 1"x25" drawer runners

2 pcs 4"x27¼" outside bases

2 pes 4"x261/2" inside bases

2 pcs 4"x16" front bases

I pe 4"x54½" rear base

I pe 4"x541/2" rear nailing cleat

4 pcs 1½ "x25¼" vertical stiles

6 pes 1"x13" drawer stiles

5 pes 1"x8" paneling 60" desk top

4 pcs 9½ "x24" large-drawer sides

8 pes 6"x24" small-drawer sides

2 pes 934 "x13½" large-drawer fronts

4 pes 6¼ "x13½" small-drawer fronts

2 pcs 9"x111/2" large-drawer backs

4 pcs 5½ "x11½" small-drawer backs

2 pes 13"x24" pull-out boards

2 pes 3x "x34 "x1344" board fronts

MISCELLANEOUS

6 pcs 12"x24"x¼" plv. drawer bots,

3" forged-iron H-hinges

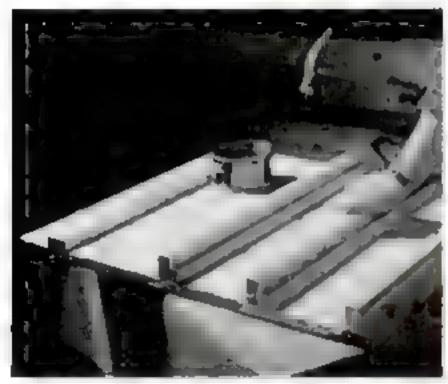
5" forged-iron drawer pulls

%" diam. forged-iron pull knobs

1 lb. 2" finishing nails

21/2" #12 flat-head wood screws

alcove or to complement a paneled room. If it is built into a paneled room, the rear paneling, of course, can be omitted by building the sides out from the paneled wall.



ELIATE HERVE TWO PURPOSES: They hold the side paneling together and fasten it to the base strip; they serve as guides for the drawers and hold the runners in position.

CROSS STILES BETWEEN DRAWERS separate the drawer openings and tie the sides of the desk

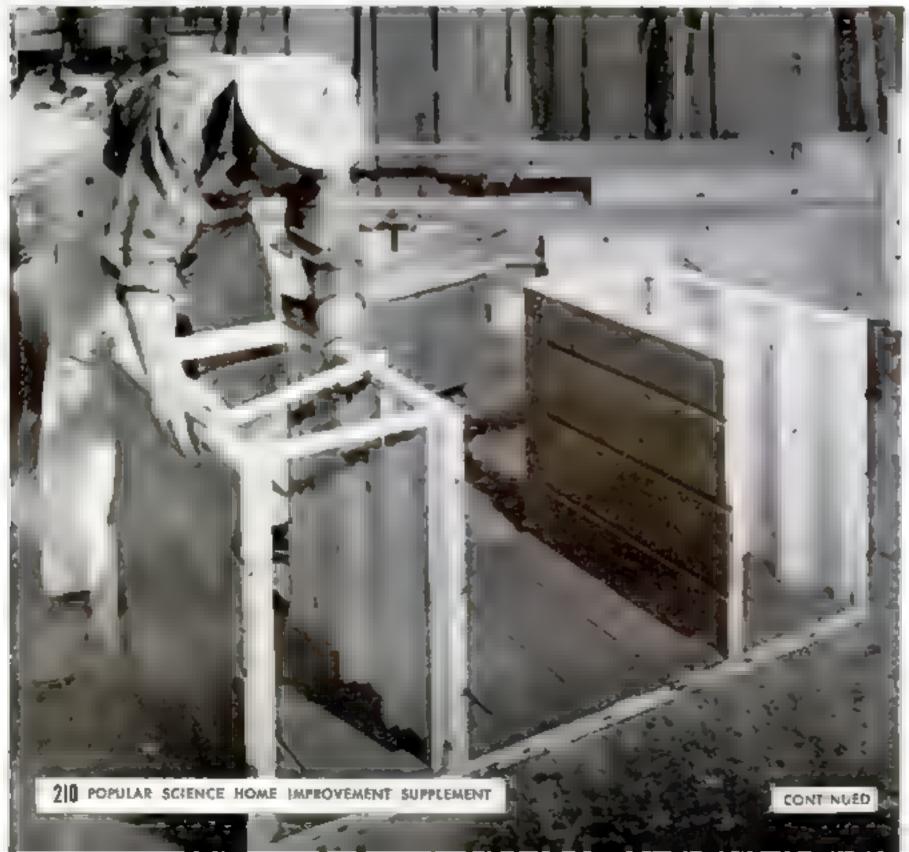
Sizes of all parts are listed for youso begin by buying and cutting your lumber.

You might use any of 10 species of Western-Pine-region lumber: ponderosa pine, Idaho white pine, sugar pine, lodge-pole pine, incense cedar, inland red cedar, Engelmann spruce, Douglas fir, white fir and larch. All are easy to work and accept any finish. The differences are in grain and color.

Think about the finish before you start. If you plan a natural finish, there's no problem. But if you want to darken the wood, prestain the tongue-and-groove boards before assembly. This insures uniform coverage and eliminates bare wood or accumulated stain in hard-to-reach places.

Assemble the four sides of the two desk-drawer sections. Choose matching lengths of 1"-by-8" tongue-and-groove paneling for each side and fasten them together over 4" baseboards with 1"-by-2"

sections together. Note that the paneling has been stained before assembly.



Removability makes the big difference

IRe Do IV

Removable Wood Windows



Removable Wood Windows are a "must" for modern, functional homes. R.O.W Windows are pressure-snug during all seasons. They are built better to last longer.

Wood windows provide greatly superior insulation against outside temperature extremes. The finest removable wood windows are identified by this emblem.





"HARRY DOESN'T MIND OUR USING HIS DEN. HE'S DOWNSTAIRS WITH HIS NEW MILLERS FALLS SAW."

these saws

Choose from

5 GREAT MODELS



Write for Free Folders
MILLERS FALLS COMPANY
Dept. PS-31
Greenfield, Mass.



800 Heavy Duty

81/4" · 2.0 HP · \$95.00

A Contractor's Special that's a real standout. Tremendous power and cutting capacity.



747 Heavy Duty

71/4" · 2.0 HP · \$84.50

An outstanding Builder's Buy, ideal for every type of work. Lightweight, easy to handle.



have it IN SPADES!



61/2" • 1.5 HP • \$69.50

An amazing all-purpose performer. Special base permits sawing in very close quarters.



727 Standard Duty

7" - 1.5 HP - \$74.50

A rugged Carpenter's Model with ample capacity as well as perfect, easy-to-use balance.



626 Standard Duty

61/2"- 1.0 HP - \$54.50

Swings through every common cut including tough compound mitres in 2-in, dressed lumber.



RABBETS CUT IN DRAWER FACE make nailing side pieces easier, and provide ¼" overlap around drawer opening at sides and bottom. Grooves are for ¼"-plywood drawer bottom.



SOLID DESK TOP is made by cutting tongue-andgroove edges off five lengths of paneling and edge-gluing. Wedges driven behind strips nailed to the workbench tighten joints.

cleats. Nail the cleats across the inside of the paneling as the joints are pulled, wedged or clamped tightly together. Locate the cleats according to dimensions and nail the drawer runners over them.

Join the rear desk paneling together in a similar manner. This paneling must fit snug against the wall, though, so the nailing cleat should be placed on the face, along the top edge. Toenail the bottom ends of the paneling to the 4" base.

Cut the four sides and rear paneling to their overall dimensions. This removes the tongue from one outer edge and the groove from the other. Notch the top rear corner of the two inner sides to fit over the rear nailing cleat. Join the sides to the back with 2" finishing nails driven through the rear paneling.

Nail the front base strips and vertical stiles to the front edge of the sides, then nail the cross stiles to the ends of the drawer runners to complete the desk structure.

Make two pull-out boards, four 6" drawers and two 9" drawers as shown. Lightly plane them after assembly, if necessary, to make them slide easily on the runners. Drill holes for pulls.

Rip the tongue and groove off five 60" lengths of paneling and edge-glue them together to make the desk top. Squeeze the boards tightly together in a jig made by nailing wood strips to a table top or piece of plywood. Drive wedges between the strips and the boards to force the joints together. When dry, trim the top square and to size, and round off the front and side edges.

Fasten the bookshelf sides in place by nailing through from the underside of the desk top. Bridge the sides with the shelf top, driving nails through the shelf top from above. Nail a temporary board diagonally across the sides and shelf top to hold the parts square. Nail the top base in place between the sides.

Nail the lower-shelf pigeon-hole dividers in position. (Drive nails through the desk top into their bottom edges, through the first shelf into the top edges.)

Carefully toenail the two dividers that will support the doors onto the first shelf, place the second shelf over them and drive nails through the shelf into the top edge of the dividers. Anchor the ends of this shelf to the sides with cleats, In-



DRIES IN 30 MINUTES

Here's the greatest paint discovery since Du Pont quick-drying auto finishes: Du Pont "Lucite" Acrylic House Paint. It's so durable it lasts 50% longer than ordinary paints... can save you hundreds in repainting costs. An acrylic emulsion, it is recommended for use only over No. 38 Blister Resistant Wood Primer on new wood or on old surfaces with the finish completely removed.

SOLVES BLISTERING PROBLEM

For a long time blistering has been home owners' most serious paint problem. Until now, it has been an almost insolvable, recurring predicament. The combination of No. 38 Primer and "Lucite" Acrylic House Paint can give unprecedented protection against blistering because it is chemically engineered to al-

low moisture vapor to breathe through while shutting out water penetration.

EASIEST PAINT TO APPLY

"Lucite" Acrylic House Paint flows on more smoothly and evenly than any paint you ever used. It dries in 30 minutes and it's ready for a second coat in one hour! Thus you can save a lot of time and money by avoiding a great deal of ladder shifting that is usually necessary. One coat covers, two give maximum protection and durability. Water is all you need for thinning. And it's so easy to clean up... fresh paint spots wipe off with a damp cloth. Soap and water clean your brushes. This amazing new paint and primer are now ready for immediate delivery at your Du Pont Paint Dealer's. You'll find his name in the Yellow Pages of your phone book.

Buy the paint that's worth the work! Your time is too valuable to risk on "bargain" paints. Buy Du Pont Paint and you know you're getting the most modern finishes made ... and that the heauty will last. Du Pont Paint Chemistry assures you of that.



stall the top shelf on cleats nailed to the sides.

To make the header, cut the scallops with a jug or coping saw and sand them smooth. Nail the header in position.

Use a 3" nailing cleat across the top of the rear bookshelf panel to join the T&G boards. Remove the temporary brace and set the panel in place. Drive nails through from behind into the shelves and toenail the bottom edges of the boards to the base strip from behind.

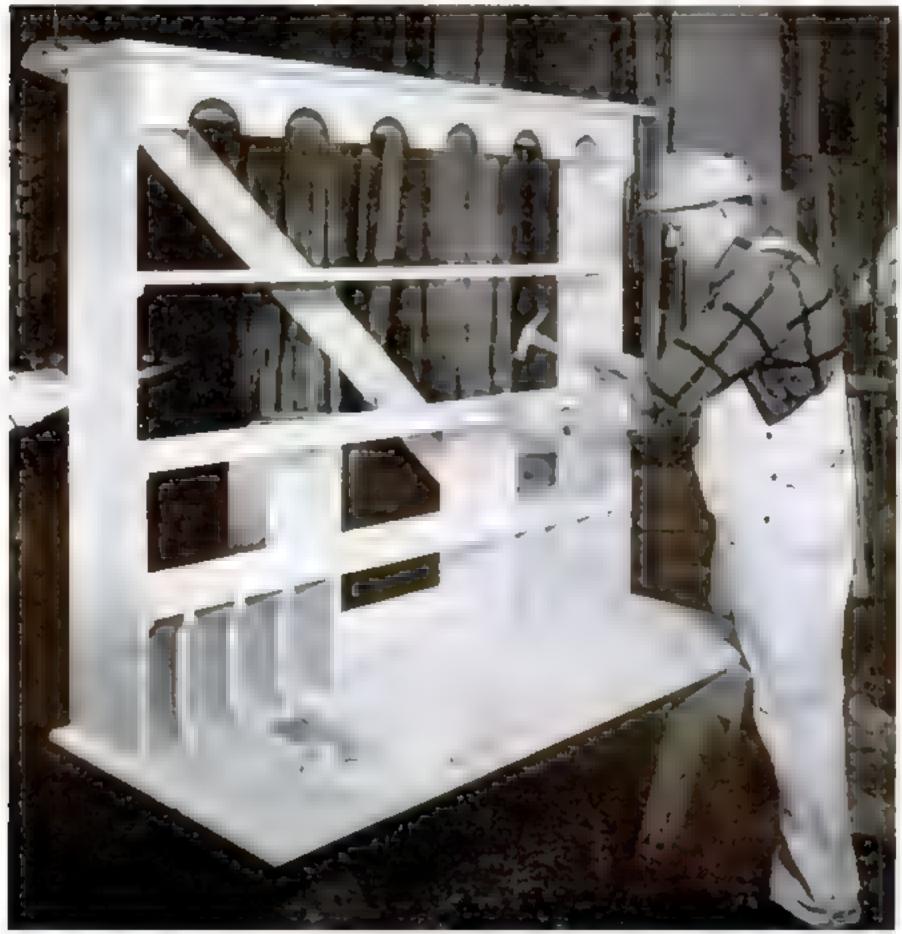
Fasten the desk top to the desk with screws driven through holes drilled in the top cleat on each paneled side.

Hang the doors to check their fit, but

remove the H hinges before you do the final finishing.

If you've prestained the paneling, stain the other parts of the desk with the same material. When dry, apply the final coat of wax or a clear finish. Shellac. Satinlac, clear lacquer or Minwax are all good.

THE WESTERN PINE ASSOCIATION has now added thus bookshelf desk to its list of plans. If you like the convenience of working from a separate plan that lies flat on your bench, wrste for a free bookshelf-desk plan. The address: Nestern Pine Association, Yean Bidg., Partland 4, Ore.



NAILS ARE USED THROUGHOUT the assembly. Those that can't be concealed by nailing from

behind or by toenailing are set first and then covered with wood filler before finishing.



EXTRA POWER, SPEED, ACCURACY!

Skileaw 6½" Power Saw has rugged 1+ h. p. motor, built-in safety clutch. Cuts 2" boards at 45°.

There are more professional quality features on the Skilsaw Model 536 than any other saw in its price class. Yet, because of Skil's ever-increasing production, you can now own this versatile saw at a new low price—only \$49.95. Special features like its non-binding lower blade guard and Vari-

Torque, which disengages the blade if it jams or binds, makes it the safest saw to use. Then add these other top features—easy to adjust depth and bevel controls for accurate 45° to 90° cuts, plus a powerful motor rated at over 1 horsepower—and you have your best buy in power saws.





NEW, LOW-COST % DRILL. The Skil % Model 503 in your biggest drill value. Extra power from big 2.5 amp motor to drive new Skil Snap/Lock Lunder, Jig Saw, 5' Circular Saw and Hedge Trimmer that anap on or off drill in 3 seconds. Only \$16.95.



PROFESSIONAL-TYPE SANUEL.
Over 25 sq. Inches of sanding surface to quickly smooth down large areas.
Use it to sand wood, wall board, planter or remove paint and varnish.
End sanding boredom and get professional results on every job. Only \$49.95.

... and Skilsaw power tools

SKIL Corporation, 5033 Elston Ave., Chicago 30, Illinois

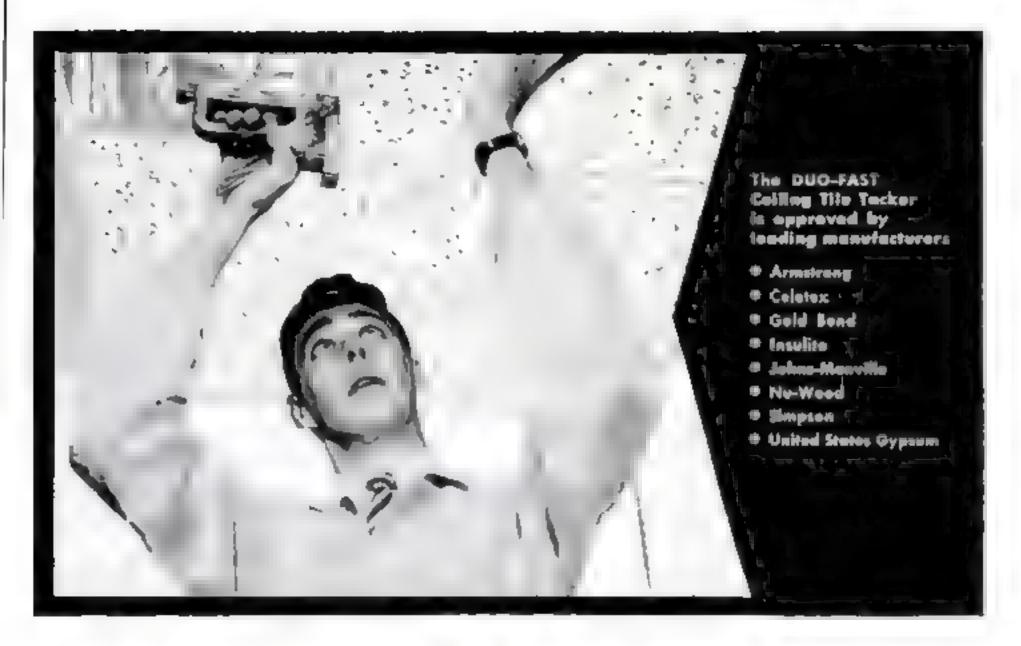
AN OPEN PORCH becomes a yearround room when you use new prefab window units (above). The units, which you just nail together (below), combine three sliding windows, screens and provision for storm sash. Heating and wiring fit in the base.

A Modern Way to Enclose a Porch

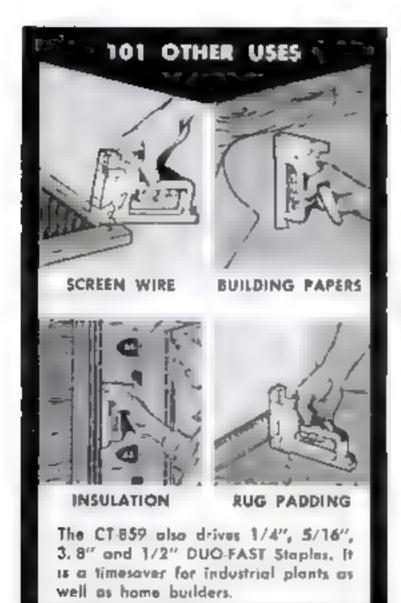
OU can buy walls of glass in prefab units and nail together as many as you need. In this ingenious system for enclosing porches and breezeways, called GlassWalls, you get the modern effect of solid glass from floor to ceiling, yet you can open the windows in summer and close them up tight in winter.

Each window panel is divided into three panes that move in separate, full-length metal tracks. You can stack the panes behind each other, leaving as much as two-thirds of each panel completely open. Or you can vary ventilation by sliding them any-





For a professional job, the easy way... use the DUO-FAST Ceiling Tile Tacker



Fast, easy, one-hand operation

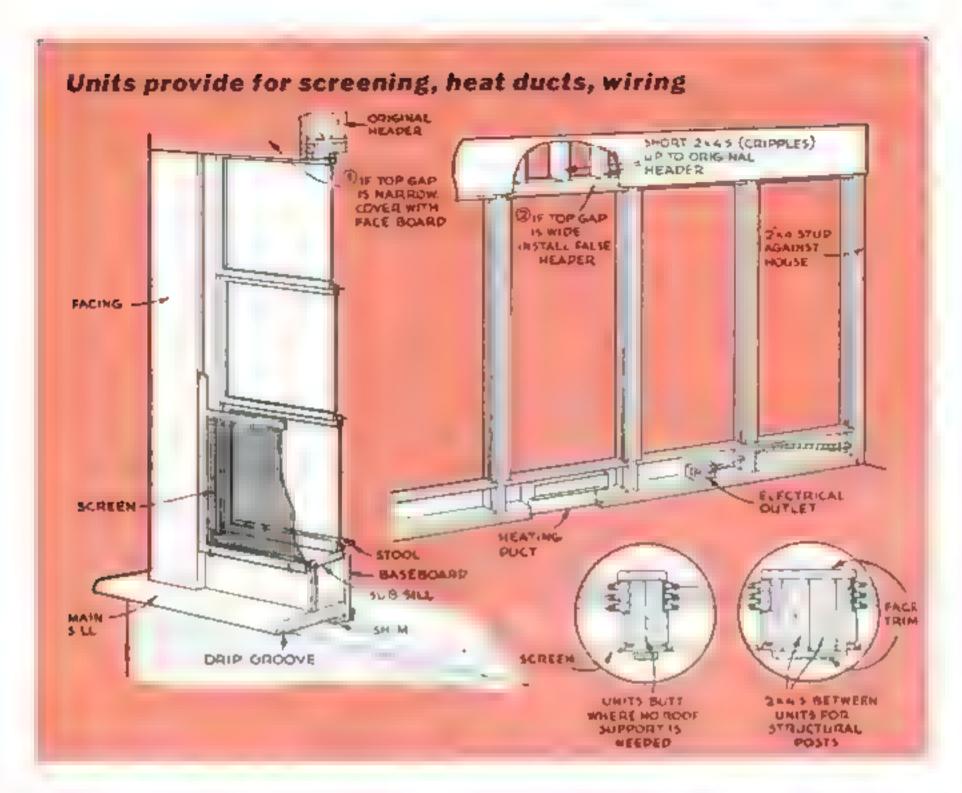
It's the automatic tacker that makes a ceiling tile expert out of everyone. Power-packed, the Duo-Fast CT-859 drives 9/16", rosin-coated staples required for the job.

Just position the tacker, and compress the handle. The tight-gripping staple is driven right where you want it. No unsightly hammer marks . . . no broken edges on the tile. And you always have a free hand to hold the ceiling tile in position.

The Duo-Fast CT-859 is made for the ceiling tile job... widely used by professional builders, and perfect for do-it-yourselfers.

Mail the coupon below for the complete DUO-FAST story

	ease send me di	ate on DLO FAST Tock
		ore improvement wa O FAST Building Moter
Address		
City	Zone	Stote

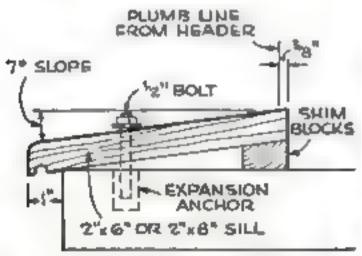


where between the floor and the ceiling.

If you stack all panes at the middle, they promote circulation by letting cool air in at the bottom and hot air out at the top. Weatherstripping on all three sliding panes provides a tight seal when the windows are closed in winter. For easy cleaning, the panes slip completely

Removable full-length fiberglass screens can be replaced in winter with storm sash, giving you a double, insulated wall of glass for greater warmth. Each unit also comes with a built-in hollow base. Arranged in rows, the hollow bases form a continuous channel for running heating ducts and wiring.

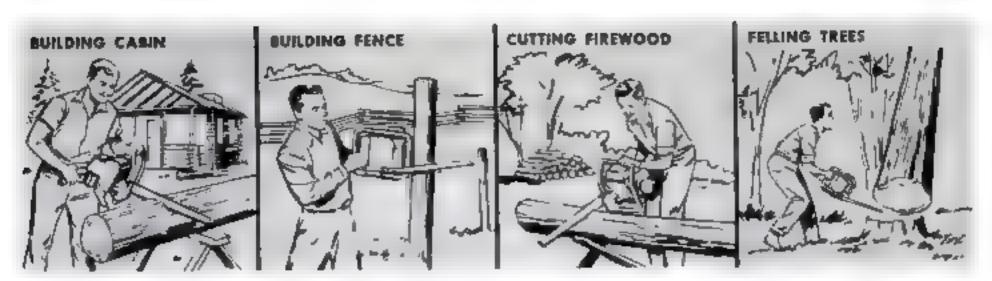
What they cost. GlassWalls are sold



out of the tracks.

sill is sloped (by shimming or planing to seven degrees) to carry off rain. Window units are precut to match slope and are lined up below header. Sill overhangs foundation, extends %" inside windows.





Now You Can Do Any Job, Anywhere, Anytime with One Saw...



Address

City

ashin with the Wright Saw. Son

10+ for "HOW-TO-DO-IT-PLANS"

and hooklet "Build the Ensy Way

With Wright Sau."

INDUSTRIES INC.

WRIGHT SAW DIVISION

410 S. Third Street

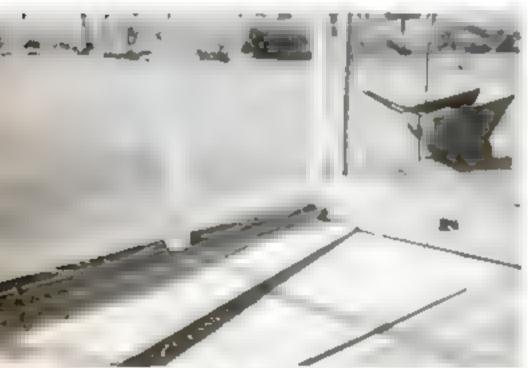
Lauisville 2, Ky.

State

Zone



METAL WINDOW TRACKS are ready-mounted in wood frames so they can be easily nailed. Where roof is already self-supporting, units are simply butted and side-nailed together. Structural supports can be provided by leaving enough space to insert posts in between windows.



HOLLOW BASES, OPEN ON ONE SIDE, offer easy access, to run wiring inside. Wall outlets are installed, then a baseboard cover is nailed over the openings. Space inside—about 2¹4" by 4"—is large enough to carry warm-air ducts, finned convectors or other baseboard units.

small GAPS ASOVE WINDOWS can be filled with spacer blocks, as below, then covered with face boards. If gaps are over 6", false header can be built using short two-by-fours, as shown in main drawing. If too deep a header will block view, it's better to build up from the bottom.



by DeVac, Inc., 5900 Wayzata Blvd., Minneapolis. Individual window panels range from \$57 for the smallest to \$87 for the largest. Average cost is \$70.

The two-sided enclosure on the opening page, using eight units, cost about \$800, including labor and a floor over the concrete. This is not cheap until you consider that you get, in effect, not just a window but a complete year-round room. The units, being prefabbed, are also easy to put up yourself, saving you the cost of labor. Where an outside entrance is desired, you substitute a matching prefab door unit for one of the window units.

The only parts not included with each panel are the sill, baseboard and trim strips. These can be bought at local lumber yards or will be supplied by dealers who sell GlassWalls. Typical cost for all extra framing and trim for an enclosure of the type shown is about \$50.

How to tell how many you need. Glass-Walls come in two standard heights, $69\frac{1}{4}$ " and $81\frac{1}{4}$ ", and in eight widths from $25\frac{3}{6}$ " to $39\frac{3}{6}$ " in 2" steps. Other sizes are available on special order.

Measure the distances between posts on your porch and allow an extra ½" in each opening for slight irregularities. For best appearance, select the largest window width that will go into each space in exact multiples.

You can intermix two widths if necessary so long as the difference between them is not more than 2". Arrange the larger units in the center of each opening and balance the narrower ones on the sides. The slight variation in width will be scarcely noticeable. If no combination of sizes will fit exactly, you can cover small gaps with filter strips.

In choosing the right window height, allow at least 2" for a sill at the bottom. The fit can be adjusted easily by filling in gaps at the top. If you don't need the base for heating or wiring, it can be trimmed off as much as 3", giving you another way of adjusting height.

DEVAC, INC. has made available separate plans showing the installation of GlassWall window units. If you would like a set of your own to work with and save, it can be obtained free by addressing a request to DeVac, Inc., 5900 Wayzata Blvd., Minneapolis, Minn.

222 POPULAR SCIENCE HOME IMPROVEMENT SUPPLEMENT

Last, but not least... it's the FINISH that counts

If it's an interior wood project, use Deft, the original complete wood finish in one can

EXCLUSIVE SELF-LEVELING FORMULATION

WOOD SELECTION, UNLIMITED



Whatever your project... paneling, built-ins, furniture, kitchen cabinets or knick-knacks, there's a wealth of woods and plywoods to select from. Each wood has a beauty all its own, a warmth, a pattern, a light, dark or medium tone. Select the wood, for it's natural charm, then protect and dramatize its beauty with

clear Deft Wood Finish, nothing else, from raw wood to bar-top finish.

FINISHING, NO LONGER A PROBLEM



Deft is ready to use, no thinning. It is fast dry and completely trouble-free.

PREVENT DARKENING AND WARPING OF NEW WOOD

A fast coat of Deft on raw wood, front, back and edges, guards against darkening and warping. Pencil and crayon marks, grime and fingerprints are easily removed with steel wool while Deft is wet

PANELING TIME SAVER

Deft-coat panels, back and front before installing. Apply with roller in minutes. When panels are in place, apply an additional coat of Deft



FINE FURNITURE FINISH



Sand surface to desired smoothness. Apply Deft with brush or roller. Where brushing is difficult, use acrosol

spray can. Light-sand first coat, dust with dry brush, then apply additional coats to desired finish, 4/0 steel wool final coat to fine furniture finish. An extra coat or two eliminates need for filler. For high gloss, buff finish with dry cloth.

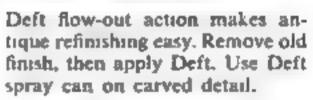
NO MORE STICKY DRAWERS AND WINDOWS

Apply Deft to drawer runners and window slides. The more they are used, the smoother the operation.

DEFT-FINISH IN LATHE

Apply Deft to turned wood in lathe. When dry, spin against steel wool for lustrous finish.

ANTIQUE REFINISHING





USE DEFT SPRAY CAN

For fast, effective finishing where brushing is difficult, such as picture frames, shutters, etc.

DEFT, A PROTECTIVE SEALER

Seals door edges against moisture. Seals interior porous stone for easy cleaning. Protects interior brass and metal hardware against tarnish and corrosion. Protects tools against rust.

SIMPLIFIES WOOD FINISHING

Deft is a clear, semi-gloss fast-dry finish. You don't brush it in, simply flow it on. Deft is self-leveling, tightens down to a mirror-smooth finish of unusual beauty. Apply 3 coats the same day. "Misses" can be spotted in and steel-wooled to match perfectly. Get a hand-rubbed finish without hand rubbing. ACCEPT NO SUBSTITUTE.

GOOD TO THE LAST BRUSH FULL

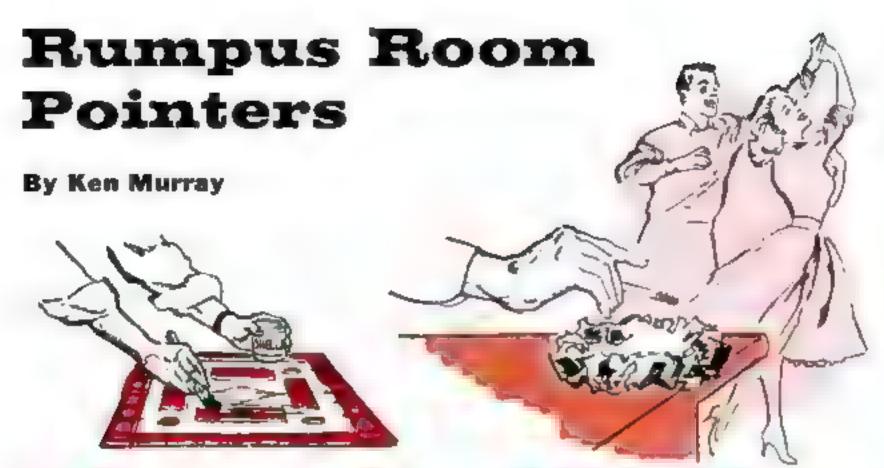
Will not darken or skin in can. A partially filled can of Deft is useable, even after several years on the shelf.

Write for Deft Free 6-step finishing chart.

Deft is available wherever points are sold.

100	
deft	
	1111
the legisla	4
end me Deft SS Wood	1

	DESMOND BROS. 1526 W. 228th Street Torrance. Calif	المعط
E	Gentlemen: Please send me Deft SS Wood Finishing chart.	
ŧ	Name.	ı
ı	Address	



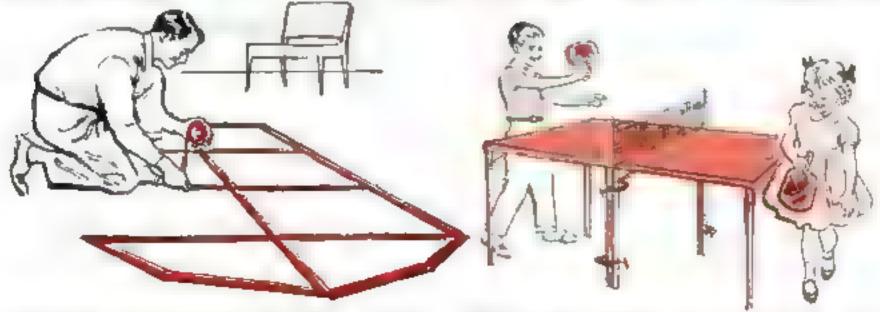
PROTECT GAME BOARDS. Printed paper surfaces of game boards soon become scuffed and worn. Protect the entire board while still new by brushing on a smooth coating of thin shellac.

DISPOSABLE ASH TRAYS. Before a party, crumple 12"-by-12" pieces of aluminum foil into batts. Then open out each, forming it into a tray. When full, crumple up and throw away.



GOU CUPS. You can practice putting shots on the floor by directing the balls into paper cups placed on their sides. Flatten a rolled tim by creasing it with a pencil.

MAROLE RING. For a game of murbles, make a ring on the floor with a piece of garden hose held together with a dowel. The hose keeps marbles from rolling into corners. DART CATCHER. A fiber door mat placed below the target will keep falling darts from pricking holes in the floor. The thick mat will also keep dart points from becoming dull.



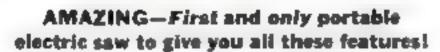
REMOVABLE GAME LAYOUT. Masking tape laid down on tile or linoleum can be removed easily. For color, coat nonsticky side with thin paint. Roll the tape down with a furniture easter.

JUNIOR TABLE TENNIS. Butt two folding card tables together, clamp adjoining legs and you've got it. Clamp two dowel rods to center legs to make projecting posts to support the net.

224 POPULAR SCIENCE HOME IMPROVEMENT SUPPLEMENT

cuts 4 x 4 at 45°...6" log...fine scroll work...complete safety

1/2 HP WIED SOUPED-UP SABRE SAW



- cuts a 6" board or 6" log yet cuts any pattern, tool
- cuts all metals up to ½" steel and 2" pipe!
- cuts 4x4 at 45° . . . fine pattern work in most any material, including sheet metal and sheet steel!
- does everything a pattern saw will do . . . out-performs a circular saw . . . works as band saw or nibbler, too!
- beautifully balanced, lightweight, smooth-running . . . completely safe!
 - makes cuts only a chain saw could-until now!

MODEL 909

only

been pair and 7 ands companies he art dos years a shed

WEN PRODUCTS, INC. 5810 Northwest Highway, Chicago 31

HP motor de ve s 3400 strokes

Henry duty to te and out to been ings to "s od under induse at

cord w h adaptor

per minute length a broke.

3 with B 1

CHARLING OF

Exported by Scheel International Chicago



Saw Kit

Beaves in 11 Cuts 2 x 45s. %" steel, enything! Works as rip saw, jig saw, cross eut, screit, coping, heck, band and heyhele saw. Cuts any shape, makes own starting hele. Saw. Kit with saw, rip guide, circle cutter, 5 blades, \$25.96



Sander-Pelipagn and Kits

Straight-line action for period, service-free sup-faces. Send wood, metal, placter perches, etc. Pel-ish ser, furniture, and surface, 3 types—fine finishing, general utility, hotey duty. \$15.05 to \$18**.5**5



3-Speed 3," Power Brill

Lete you change from 1000 to 3000 rpm to get just the right opend for different jobs. Delivers maximum torque under lead, 30° decebs geared chuck, 35° place Accessory and Toler Kit, \$6.56. Dell anly, \$28.55.



Efectrenic Spidering Suns -

for practically all home seldering jobs. Working het in 2½ to 5 seconds, Long reach, long life tips, automatic spotlight, 6 models 100 to 258 watts. \$5.86 to \$15.96

On one side—a sink-equipped bar; on the other—a powder room



WITH RUNNING WATER at your elbow, there's no need to lug trays of glasses back to the kitchen for the rinse-and-polish treatment.

TWIN LAVATORIES on the opposite side of the plumbing wall are a popular modern note. Sliding mirrors above hide spacious cabinets,

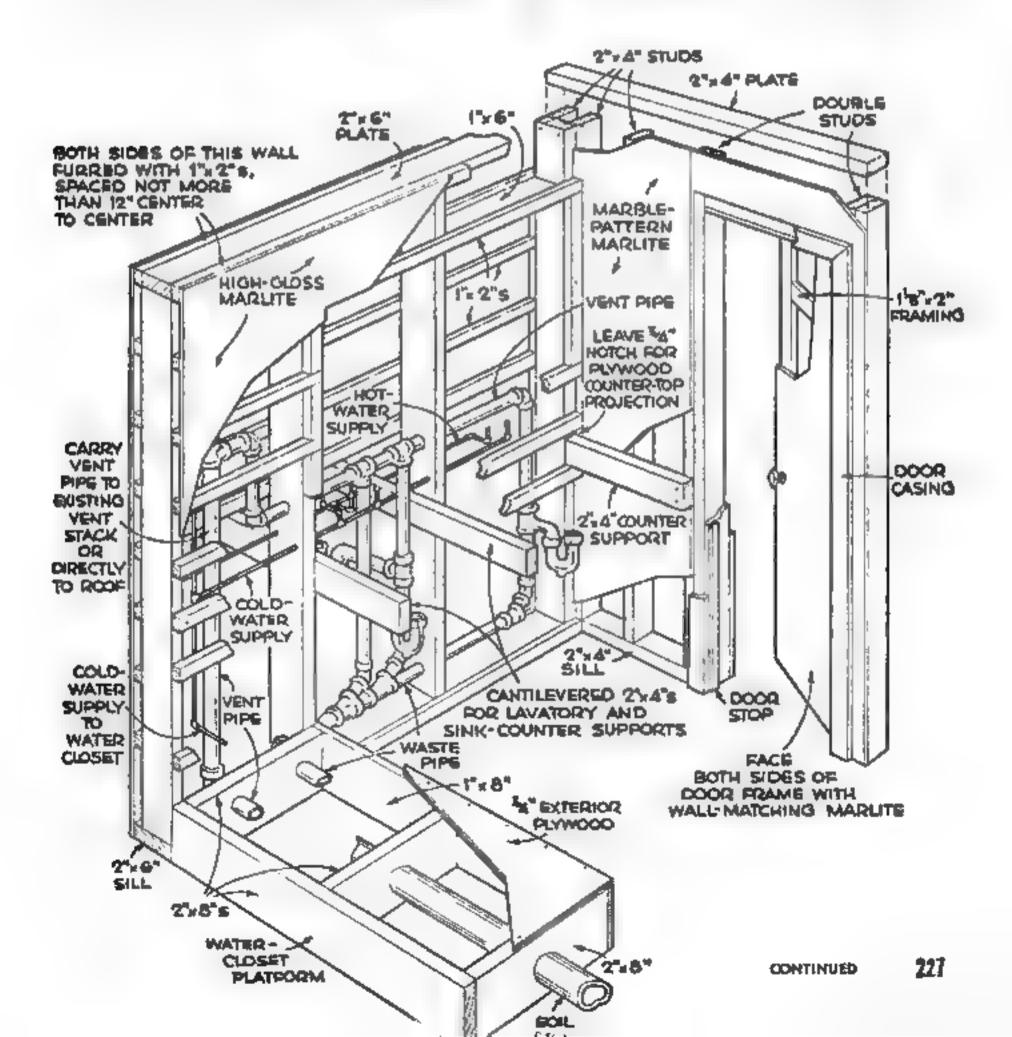


Two-Way Plumbing Wall for a Rumpus Room

Large ERE'S the easy way to add a powder room and sink-equipped bar to your rumpus room. Build a two-way plumbing wall. Place common water-supply lines, and waste and soil pipes inside; then tie the fixtures to the two sides of the wall.

That's the idea behind the attractive

bar-and-lavatory layout shown here. The wall pays off as a space-saver, too. Because it carries no structural house load, it offers big pockets for oversize medicine and storage cabinets. It has another nice hideaway feature—a hinged bar that swings around to cover the sink when not in use. In that position the



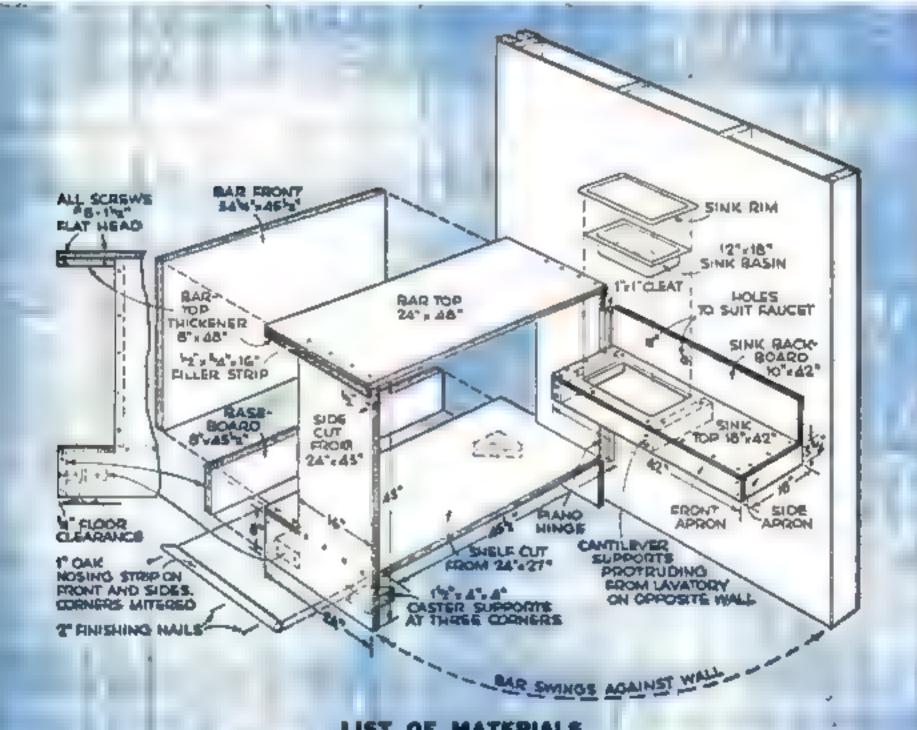
two units take no more game-room space than one.

In appearance, the installation can be the showpiece of your home. The walls, bar, lavatory and sink counters are all covered with plastic-surfaced hardboard. Sheets of this easy-to-handle and durable material come in a wide enough range of colors, designs and patterns to suit any taste.

Check codes first. Before you start this project, call on your plumber to recommend a hookup that will comply with local regulations. If you're dealing with

a concrete floor, ask him about the feasibility of framing an elevated platform for the toilet. This eliminates the expensive chore of jack-hammering a trough for its waste and vent pipes. Instead, they rest on the top of the slab, with the water closet raised high enough to accommodate the lead bend to the wall.

Framing the plumbing wall. In the installation shown, two-by-six spaced on 2' centers call for only two breakthroughs for the horizontal pipes. A pair of two-by-fours spiked across two of the stude offer cantilevered supports



" fir plywood (two 4'26" panels)

for bar:

1 pc 24"x48" top 1 pe 8"x48" thickener 2 pes 24"x43" sides

I pe 34¼ "x45½" front l pc 8"x451/4" baseboard 1 pc 24"x47" shelf

for sink:

1 pc |8"x42" top

l pe 10"x42" backboard

1 pc 3¾ "x42" front 2 pcs 3¼ " x 17¼ " side

2 pcs 1/2 "x16" filler strips 6 pcs 4"x4" easter triangle supports

LIST OF MATERIALS

"Hard-gloss" plastic-surfaced hardboard (one 4'x8' panel)

for bar:

1 pc 24"x48" top l pc 15%"x48" front edge

2 pcs 1% "x24%" side edges

1 pc 834"x4714" baseboard

1 pc 81/4" 1471/4" footrest for sink:

1 pc 10% "x42¼ " backboard

1 pc 34 "x421/4" top edge 2 pes % "x10" side edges 1 pe 17% "x4254" top

1 pe 414 "x4214" front 2 pcs 41/2"x18" side

Plastic-surfaced hardboard (one 4'x8' panel)

1 pc 341/4 "x471/4" bar front I pc 24"x43" bar sides

Miscellaneous

1 7' length 1" nosing 1 ¾ "x30" piano hinge 1 1"x1"x30" pine cleat 100 11/2" #8 flat head SCTEWS. l qt. waterproof mastic





with Unique, Versatile DeVAC GLASSWALLS!

Remodel your summer perch, or build from the ground up, with DeVAC GlassWalls, and your porch becomes an attractive "estra room" for pleasure-full year-'round tiving, Only DeVAC GlassWalls have three aluminum sliding panels for directional control of ventilation (see diagram) . . . panels that lock securely in a variety of positions with DeVAC's exclusive, easy-to-use Pin-Lock device.

DeVAC GlassWalls are floor-to-ceiling "package" sections with fabricated wood frames around the three aluminum and glass slid-Ing panels, installation is easy and fast, and requires only the normal carpenter's tools. Each glass panel is easy to remove from Inside the room for cleaning. Extruded from high-grade, heavy-duty anodized aluminum, they won't rust, fade or corrode. And each unit includes strong, full-length Fibergias acreens on the outside.

ER MAIL COUPON TODAY

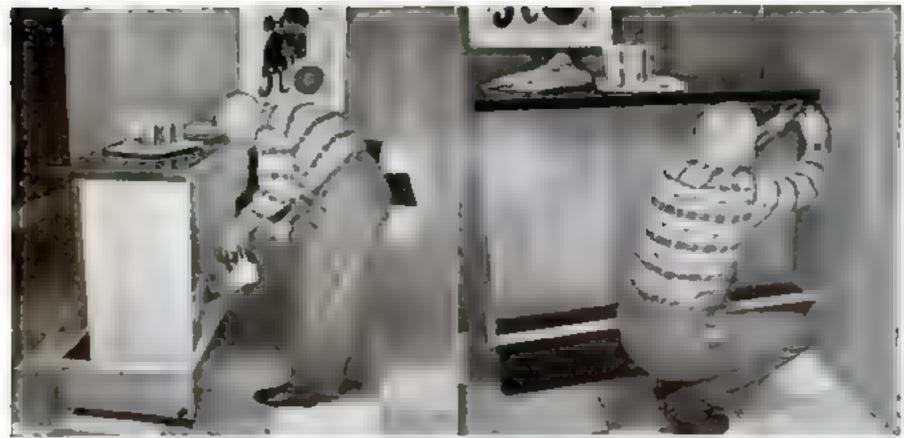
Architectural deta	die ere in	Sweet's	Catalog
--------------------	------------	---------	---------

DeVAC, INC.

P.S.-50

5000 WAYZATA BLVO., MPLS., MINN

Please send complete installation and price Information.



READY FOR ACTION, the bar has plenty of undercounter space for live and dead soldiers.

PARTY'S OVER, and if you treasure your sodapop supply, a lock will foil small raiders.

for the sink on one side, and twin washbasins on the other.

If your rumpus room is in the basement, or has a slab floor, anchor the framing to it this way: Position the sill, and hammer spikes through it every two feet or so, pounding them hard enough to mark the concrete below. Then remove the sill and make a hole at each position with a carbide-tipped bit or star drill. Drive a wooden plug into each hole, put the sill back in place, and spike into the plugs. Follow the same technique to pin down the sill for the other wal! of the bath enclosure, and to attach studs to masonry walls.

Once the wall is framed, it's time to have your plumber install the hot and cold water-supply lines and the waste and vent pipes.

Furring the frame. As already pointed out, spacing the plumbing-wall studs wide apart makes sense as far as the pipe installation goes. But the frame must also offer a firm support for the plastic-covered hardboard used to face both sides of the wall

To back the material properly, use horizontal furring strips, spaced no more than a foot apart, center to center. Vary the spacing on the conservative side, where necessary, to provide support behind the horizontal edges of all panels. Also apply vertical furring strips to the two studs framing the sides of the cabinet on the powder-room side.

Don't use nails to fasten the hardboard to the strips. Apart from looking uncraftsmanlike, they'll chip the hard plastic surface. Instead, attach the panels with contact cement or special mastic.

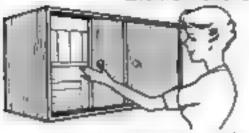
On the adjoining enclosure wall you can cement the panels directly to the frame if you space the studs on 1' centers. For studs spaced farther apart, use furring strips. While you're at it, why not custombuild a door to match the wall? If you wish, you can insert perforated sections for ventilation, as they, too, are available with plastic surfacing.

These basin and sink tops save money. The cantilever supports projecting from the plumbing wall give you a good start in the handsome but inexpensive twin basin and sink counters. Both are built around these basic framing members and, in the case of the former, another two-by-four spiked to the end-wall studs.

Their sides and tops are sections of exterior plywood, butt-jointed together with screws and overlaid with plastic-surfaced hardboard. Be sure to specify the "high gloss" variety intended for use in baths and even showers. Bond it to the plywood with contact cement, or with one of the waterproof mastics put out by Marsh Wall Products and other manufacturers.

When you order the sink and basins, get the kind that comes with mating aluminum or stainless-steel rims. Those shown in the photos are American-Stan-

Enclose unsightly storage space easily!





Aluma-Slide

Build cabinets the professional way. Afuma-Slide makes you an "expert" at installing sliding cabinet doors with smooth, finger-touch action, it's simple and fast. No special tools needed. Use plywood, hardboards, perforated panels from 14 to 14-in. thick, Gleaning, aluminum Alumo-Slide track sets come packaged ready to use.



Stop under door drafts









WHEN CLOSESI



DOOR BOTTOM

Thick felt strip clears rug automatically when door opens. Lowers to make snug fit when door closes. Sosy to install.

Fill those cracks



CALKING COMPOUND

Won't dry out, crack or run! Easy-to-use M-D Speed Loads fit any gun. Color is white or off-white. Can be painted to match trim. Also in handy Squeeze Tubes for small calking jobs.



Available at Hardware and Lumber Dealers

MACKLANBURG-DUNCAN CO. OKLAHOMA CITY, OKLA.

PEEL OFF PAI



- Remove old finishes easier, faster
- Non-inflammable and needs no afterwash.
- For wash-off or scrape-off use

Heavy-Bodied KLEAN-STRIP

PAINT REMOVES

THE KLEAN-STRIP CO., INC. 2340 S. Lauderdale, Memphis 6, Tenn.

Johnistery Malerials New Fours Lamp Parts Mutal and Wood Less Cabinet Mardware Mu- c Bones Actiony and Water Shi High

Quer 1500 Hemi

Everything for the Craftsman!

Mouldings, Hardware, Tools . . AT LOW MONEY - SAVING PRICES! First command wheel spring a ser per get do the last an

FOR INTEGRITY IN MUSIC...THERE IS NOTHING FINER THAN A STROMBERG-CARLSON



Here are performance and control features found only in amplifiers much higher in price. Some of these are: each omplifier, on a single chassis, provides 30 Stromberg-Carlson walts" of clean balanced power, exclusive Stereo Tone Balance Signal, channel reverse switch; separate valume, bass and treble controls on each channel; master goin control. Price: \$169.95 (Audiophile Net, Zone 1).

Your dealer is listed in the yellow pages or write for complete specifications.

*Our deliberately conservative ratines will exceed published spec-Efficiations, based on ASRE measurement precedures.

STROMBERG-CARLSON

A BIVISION OF GENERAL DYNAMICS 1462 N. GOODMAN STREET - ROCHESTER 3, N.Y.

dard's model P7028 sink and two model F 470 lavatories. Cut the openings in the counter tops to fit the rims, not the basins. Finish off the units by applying backboards bored for faucet connections.

Finishing off the medicine cabinets. Use one-by-sixes for the tops and a single piece of one-by-nine, notched for the studs, to form the bottoms. Face the furring at the back of each cabinet with hardboard before toenailing shelves to the studs. Apply trim strips to the sides and top of the opening, and install double-groove tracks for sliding mirrors.

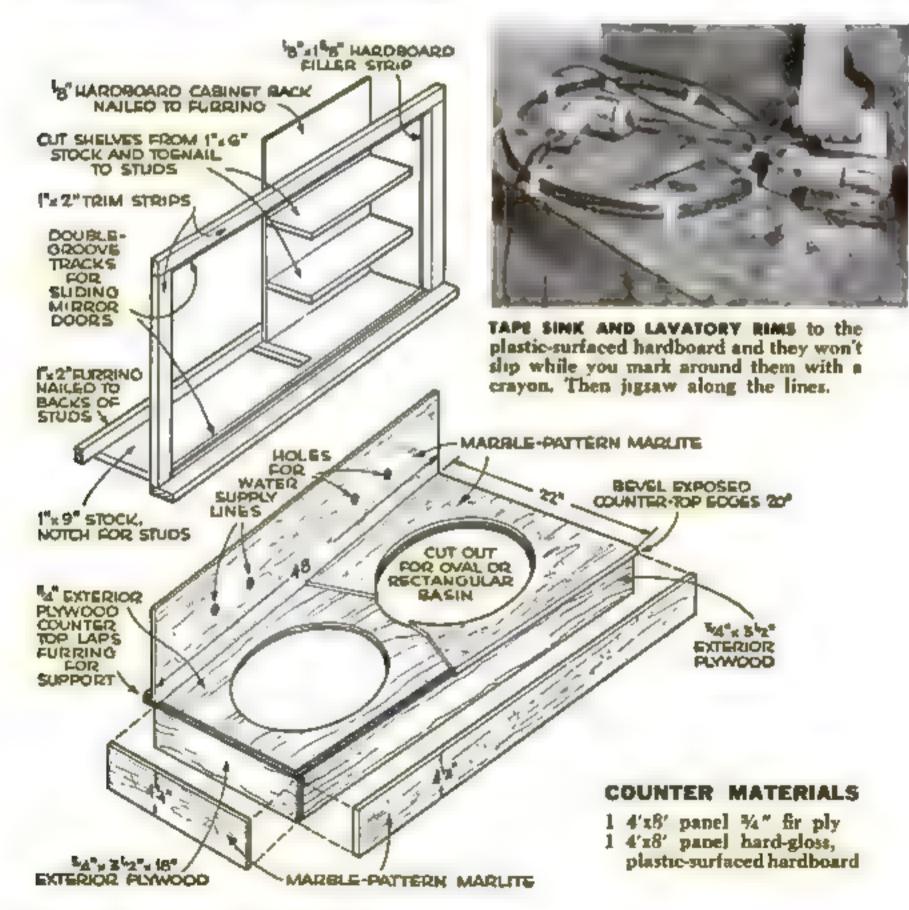
Pivoting bar is the big space saver. A piano hinge and three tea-wagon casters let the bar glide smoothly between open and closed positions. When in use, one side butts against the plumbing wall, conveniently at right angles to the sink.

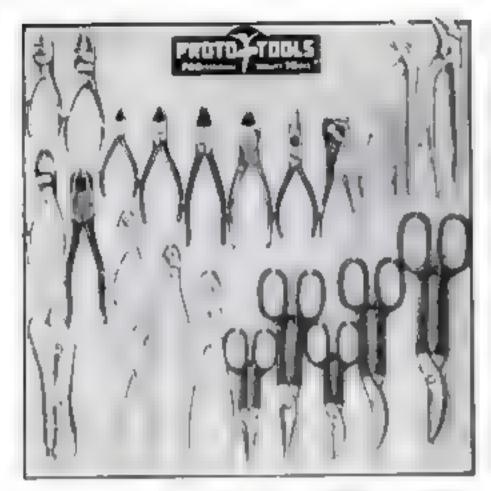
Swing it around and it boxes in that fixture, with clearance below for the contents of its storage shelf.

Again, it's a plywood-and-hardboard fabricated job, with a "high-gloss" surface on top. Or use V-grooved hardboard with a plastic finish to cover the bar front and ends. The footrest—a projection of the storage shelf—is edged with oak nosing to stand the scuffing a popular furniture piece like this is bound to get.

THE MARSH WALL PRODUCTS COM-PANY has made separate working plans available for this basement-improvement project. If you like the convenience of working south such plans, address a postcard asking for the bar-bath plans to Marsh Wall Products, Inc., Dept. PR-1, Dover, Ohio.

................





Proto makes more than 80 different Pliers and Snips...and more than 2,100 other fine tools...each one guaranteed.

PROTO TOOL COMPANY

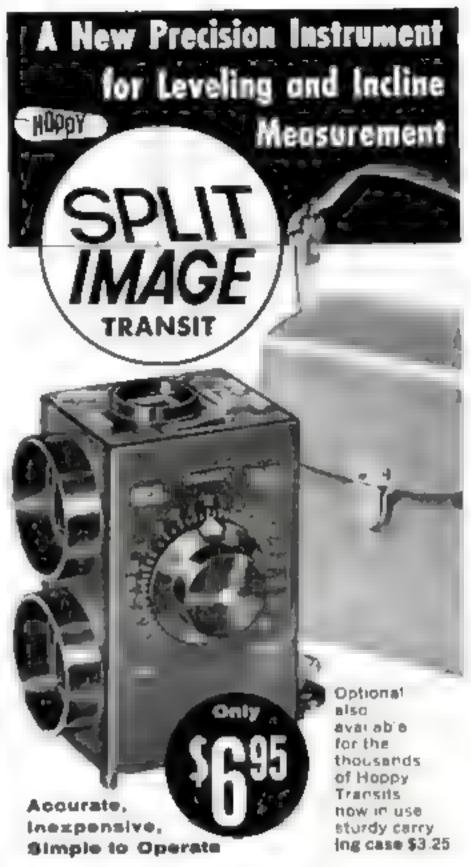
2203 Santa Fe Ave., Los Angeles 54, California 503 Allen St., Jamestown, N. Y. 1703 Oxford East, London, Ontario, Canada



Looking — for a lifetime. A spring-balanced Balco door flours open at a touch . . . locks securely . . . costs so little. And you can install it yourself — in just a few hours!



Simplifies Complicated Measuring



Easy as a camera to operate! One man—ALONE—can do leveling and incline measuring. Accurate to a fraction of an inch, Many uses on the job and around the house

Carpentry Leveling Patio & Terracing Duct Installation Foundation Work

Contour Plowing Brick Laying Yard Grading Irrigation

Guttering Drainage Masonry ETC,

Guaranteed Product Satisfaction



If not available at your Building Supply or Hardware Dealer, write directly to:

HOPKINS MANUFACTURING CORP.

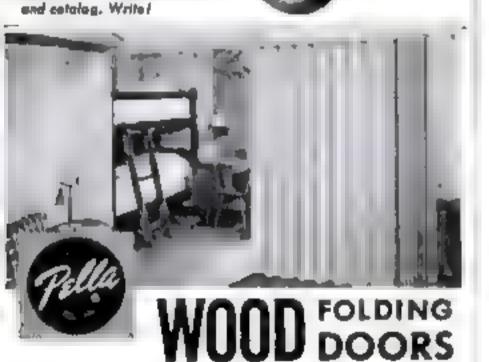
Dept. PS-8

Emporia, Kansas

Another Quality Product by HOPPY







ASH . BIRCH . OAK . PINE . PHILIPPINE MAHOGANY . AMERICAN WALNUT

MERE'S AN IDEA—Use PELLA WOOD FOLDING DOORS with their natural beauty of wood as room dividers, closures for closets, utilities, storage areas. Save floor and wall space. Easily installed. Order unfinished and save. Distributors in U.S. and Canada.

ROLSCREEN COMPANY, Dept. KC-4t, Felia, lower Please send free 6-page Folder on PELLA WOOD FOLDING DOORS.

NAME

ADDRESS

CITY & ZONE

FREE! "How to Spray" booklet

SYATE



woodwecking

Ask the "pro"...your tool or lumber dealer .

Versumatic triples portable drill usefulness. Reverses/
Drives and removes screws, nuts, bolts. Boosts power 7 times. Set includes regular and Phillips-type bits, and ½" square drive adapter. For heaviest drilling jobs in steel and concrete, add a ½" Supreme Brand Chuck.





You can make good use of prefinished plywood in building this handsome

Bunk Bed That Hangs from the Ceiling



Your eyes don't deceive you—there is no base beneath this space-age bunk bed. It "floats" above the floor

Hanging solidly from the framework of the house, the bunks are made of prefinished plywood matching the walls. This match makes them the ultimate in builtins accompanying an atticfinishing or room-paneling project.

Such projects have been made easier—and tidier—by prefinished plywood panels. Once natled in place, they're complete. And the decoratively perfect finishes are available in a variety of woods. "Gray Mist Ash" by Georgia-Pacific was used in the original room and bunk-bed project.

In spite of their lush professional appearance, the bunks are easy to build. Straight cuts and butt joints can be used throughout, making construction with hand tools simple

The first construction step is to contact-bond a sheet of 14" prefinished wall paneling to a sheet of 1/2" plywood. This makes a workable panel 3/4" thick. You need a couple of quarts





MOTO-TOOL MODEL No. 2 \$19.95 steel cutters, grending MOTO-TOOL KIT No. 1 921.00 wheels, etc.) in a sturdy

MOTO-TOOL KIT No. 2 (as shown) Incl. Model No. 2 Moto-Tool, 23 ac-MOTO-TOOL KIT No. 1 \$23.00 Storage cose SZF.00

QUALITY POWER TOOLS SINCE 1934

DREMEL MFG. CO. Dept. 1291, RACINE, WIS.



ALUMINUM SIDING

exclusive BAK-R-FOAM* Insulation

sever up to 30% on fuel bills. *Pal, Peng.

Heavy gauge pluminum is protected with two coots of baked enamel. Almost cares for itself. Nearly 50 color combinations available.

Send for complete information on Alsco Aluminum Siding, including colors.

ALSCO Aluminum Bullding Products, Boot, AG-36, Abroo S, C.



SHOOTS A STAPLE WHEREVER DRIVE A NAIL! FASTER! CHEAPER! BETTER!

For Use in the T-50 Staple Gun

ARROW'S CEILTILE® STAPLES

Especially Designed for Colling Tile Fastening

- · Unique leg design drives flush, holds tight
- CEILTILE penalitates perfectly! • Floring is naver froctured
- Special coment cooling prevides tramendous holding power? Touted and Approved by Major Coiling Tile Menufacturary







ARRESTS.



Here's the big difference you usually can't see!



Ordinary Staple

Often fractures the unseen back of the tile flonge.



Arrow's CEILTILE Staple

Unique leg design locks flush, holds tight

T-50 STAPLE GUN ATTACHMENTS



WIRE ATTACHMENT



SCREEN ATTACHMENT

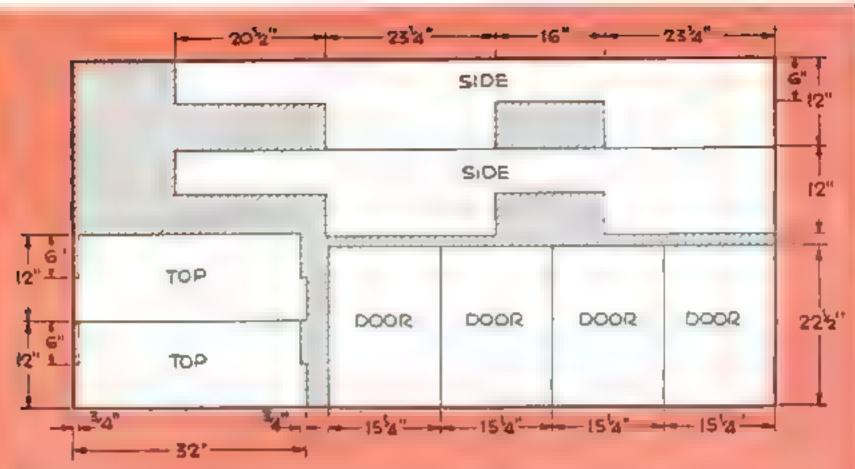


WINDOW SHADE ATTACHMENT

These handy, interchangeable slip-an attachments open up a wide range of new fustening uses around the home. Price: \$1.00 each

Available at Hardware, Building Material, Lumber Yard, & Stationery Dealers Everywhere,





for saw cuts—to get all important prefinished pieces from a four-by-eight panel. Reverse plan for bunks to fit a corner at right angles to the one shown. Doors are oversize, trimmed when hinged in place.

LIST OF MATERIALS

1 4' x 8' panel ¼" prehiished pls.

1 4' x 8' panel 1/2" fir ply 2 4' x 8' panels 3/4" fir ply-

2 cab, bots, 1134 x 1032

2 cab, backs 23147x30127 2 cab, shelves 1014/x30127

2 shelves 7% x 60% 4 bed ruls 5" x 75

4 end rails 5" x 30

4 side cleats 2" ± 73%."
4 end cleats 2" ± 28½."
2 4' ± 8' panels ½." he ply-

2 bunk hote 29% x7% 47 1 pc 2 x8 pme, 30%.

time to 6 width)

2 % the 6 dowels

Miscellaneous 60 1%

18 fitherd wood serews

10 2 = 10 flathead wood

screws, 6 % " x 3" c arrage bolts, contact cement gluc finishing nails, door pulls hinges, catches

Note: Lumber may be used for cleats, rails, and shelves. Bed rail and cleat dimensions about the checked against mattress yee Dimensions given are for 30° z 73½" mattress.

of contact adhesive for this job, but they're cheaper than the finishing materials you'd need to match raw wood to the paneling.

Careful cutting—see pattern—will put face veneer on all important surfaces. Where screws go through the finish, counterbore and fill the holes with plugs cut from scrap. This is an easy operation with the matched counterbore and plug-cutter sets now on the market.

(With accurate cuts and close-fitting joints, glue and finishing nails would be strong enough. Heads could be sunk and filled with putty-stick filler.)

The headboard's top cross member—the piece which fits against the ceiling—is made of 2" stock pine. To reinforce the outer end of this piece, two \%" dowels are glued in holes drilled through its width. The dowels give firm anchorage for screws and beef up the end grain.

This screwed-and-glued butt joint can

be replaced by an even stronger tenon and dado joint if power tools are available. Dimensions for such a joint are included in the drawings.

The suspended corner of the bed can be secured to the ceiling most solidly by \frac{1}{2}" machine bolts into a two-by-six saddle crossing the tops of several joists. This bolt-and-saddle system will hold the bunks regardless of their use as landing fields or trampolines by husky youngsters.

Where a finished floor or cramped attic prevent access to the top of the joists, you can use one of the alternate fastenings. One of these amounts to simply lagscrewing the top member to the ceiling joists, or to a joist-high bridge spiked between two ceiling joists.

The original flying bunk bed was secured by 3/8" lag screws to a single joist, and shows no eagerness to descend.

Wherever lag screws are used, they should be centered in the joists as ac-



TO CRAFTSMEN EVERYWHERE THIS LABEL MEANS

QUALITY AND PERMANENCE

For every fastener application that calls for permanence, Southern makes a quality screw to fit the job. There are no better screws made than U.S.A -made Bouthern

Screwn Specify "Southern Screws"

Buy 'em by the box and save! SOLD THROUGH LEADING HARDWARE AND BUILDING SUPPLY

Wood Screws * Tapping Scrawe # Steve Bolto * Machine Screws & Huts # Carriage Bolts . Henger Bolts * Dowel Screws * Wand Drive Screwe



vacation









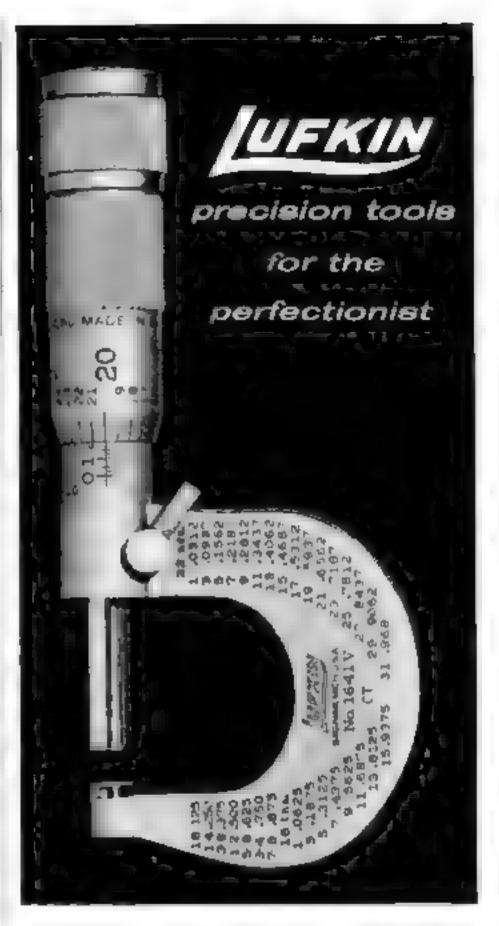


NEW full-color "plans and ideas" catalog shows 20 easy-te-build fir plywood cabins.

Here's the perfect source of ideas for anyone planning to build a vacation cabin. New catalog shows smart, modern designs by leading architects for cabine of every type and size-complete with full-color pictures, floor plans and building tips. Plans call for sumple, straight forward construction. with big, easy to use panels of fir plywood, to save you time, money and trouble when you build

Complete building plans svallable for all 20 cabins. SEND 10c for new full-color catalog: (Offer good USA only)

BBUGLAS FIR PLYWOOD ASSOCIATION, Bept. 11, Tacoma, Wash.

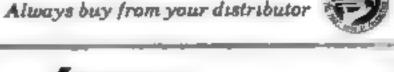


EASIER TO READ

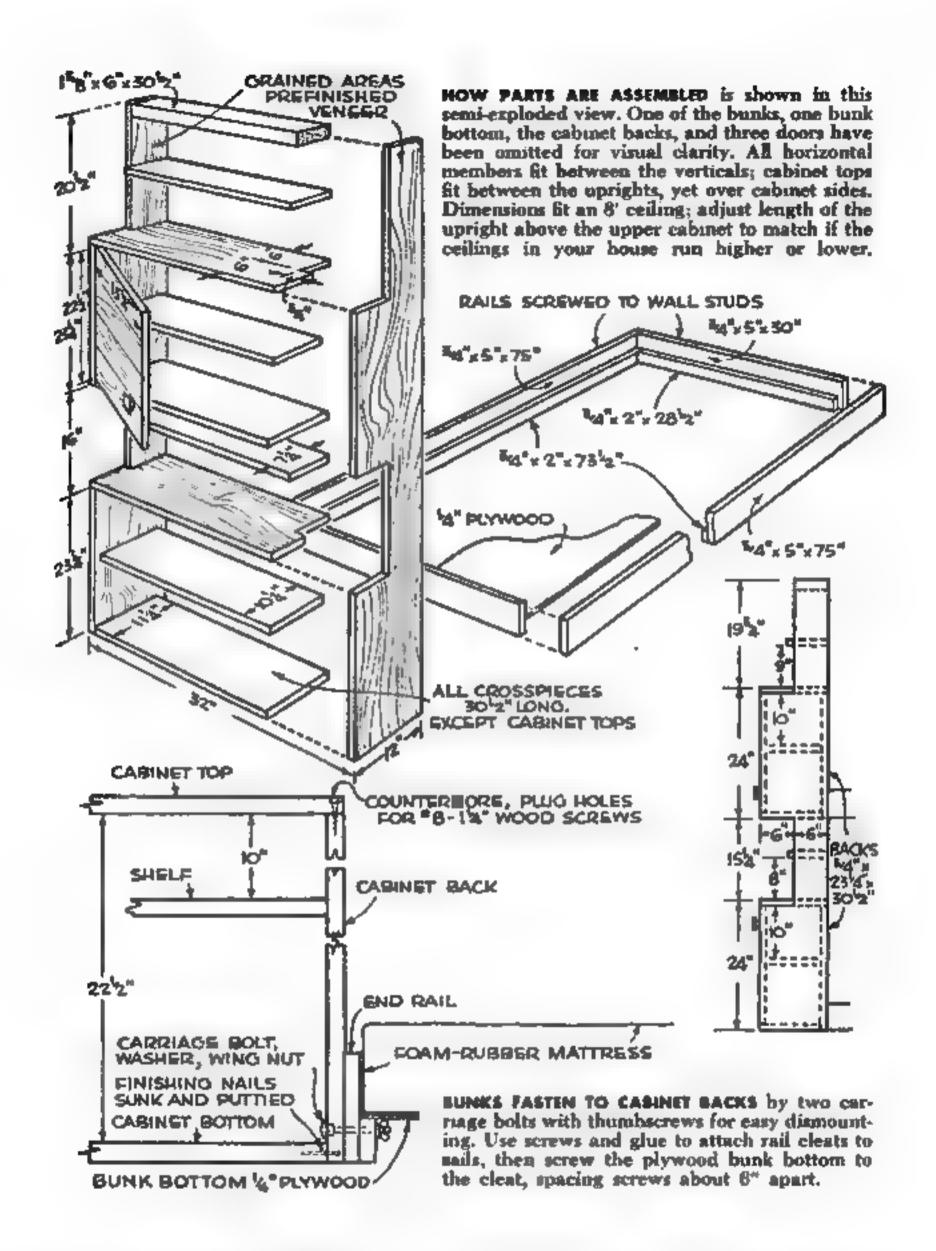
Bigger Barrel. Graduations are farther apart and numbers are larger for fast, accurate reading.

Exclusive Com Lock. A flick of your thumb and you lock the setting. Prevents coatly errors in reading.

Simple Adjustment. Reading line stays in original position. Makes it easier to keep your mike accurate.



TAPES . RULES . PRECISION TOOLS SAGMAN, MICH. - MIDDLETOWN, N.Y. - SARME, ONT



curately as possible. Finding the joist centers may demand drilling exploratory priot holes; locate the holes so they'll be covered by the bed. If you must use the surface cleat to cross inaccessible joists, paint it to match the ceiling—it'll practically disappear.

Half the bunks' weight is carried by the walls; side and end rails are screwed to wall studs. If you're using horizontal furring strips in applying wall paneling, make sure the bed rails don't fall between strips.

You can insure solid support either by

Painting is 6 Times Faster!

RED HEAD

You can spray a chair in less than 5 minutes, save up to 85% painting time on any job, with the new, hispeed RED HEAD Sprayer. Takes drudgery out of painting furniture, fences, porches, siding, etc. Perfect, too, for insecticide fogging, garden aprays, waxing, greasing, inflating, cleaning Handles heavy or light paints, enamels, chemicals. So handy you'll use it for 101 chores around home, shop, farm

Outperforms them all — even many larger unital RED READ is the most efficient sprayer made — delivers full 3.5 cfm at 50 psi, yet weighs under 30 lbs. Only 10" high, Easily portable — use it anywhere.

37 other models from \$30 Write for literature today!

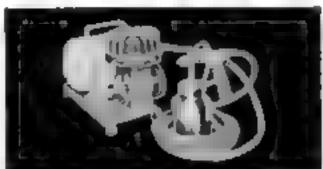
JOHNSON RED HEAD SPRAYER

See your dealer

UC

*44 COMPLETE KIT LESS MOTOR

JOHNSON BERVICE COMPANY Compressor Div., Dept. W. Milwaukee 1, Wis.



00 3

dial new dado widths in seconds



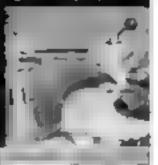
YOU CAN DO IT WITH A COMET QUICK-SET BADD, DESIGNED FOR FAST, PROFESSIONAL PRECISION

It fits any table or radial arm sow....com to a depth of 1/4"! Dial acact widths (from 1/4" to 1/4"), without removing tool from the arbor. Cut perfect dudes, rabbets, and ploughs with COMET helanced, tool-stool blades. They stay sharp 5 times longer!

For true weedworking satisfaction, get a high pro-

claion COMET HOME WORKSHOP!
If not at your dealer, write direct.
Order by return mail, prepaid:
" QUICK-SET DADO, \$19.95. 9",
1/4"-1%," x 1" deep, \$44.95.

COMET MANUFACTURING CO. 2033 Santa Fe Av., Les Angeles 21 Cal





costly garage doors with

STANSTRIP*

Now . . . for less than \$3.00 . . . in less than 10 minutes . . . you can put StanStrip on an 8-foot overhead garage door. And what a difference it makes!

The thick, rubber "pad" cushions the shock of closing . . . prevents damage to doors, spares the windows, ends the crash of closing.

And, just as important, the double lips of StanStrip flex to follow every irregularity in the floor... seal the opening completely against dust and dirt, rain and snow. Your garage stays cleaner, drier, warmer. Your car starts easier in winter.

And does it last! You just can't hurt Stan-Strip. The special rubber compound was

developed from hundreds of formulas tested for this purpose. Stays flexible even in coldest weather. Get StanStrip now at hardware and building supply stores.



SEAL HOME DOORS AND WINDOWS, TOO Ask for StanSeal, the grey rubber compound strip that you uncoil and nail as you go. A

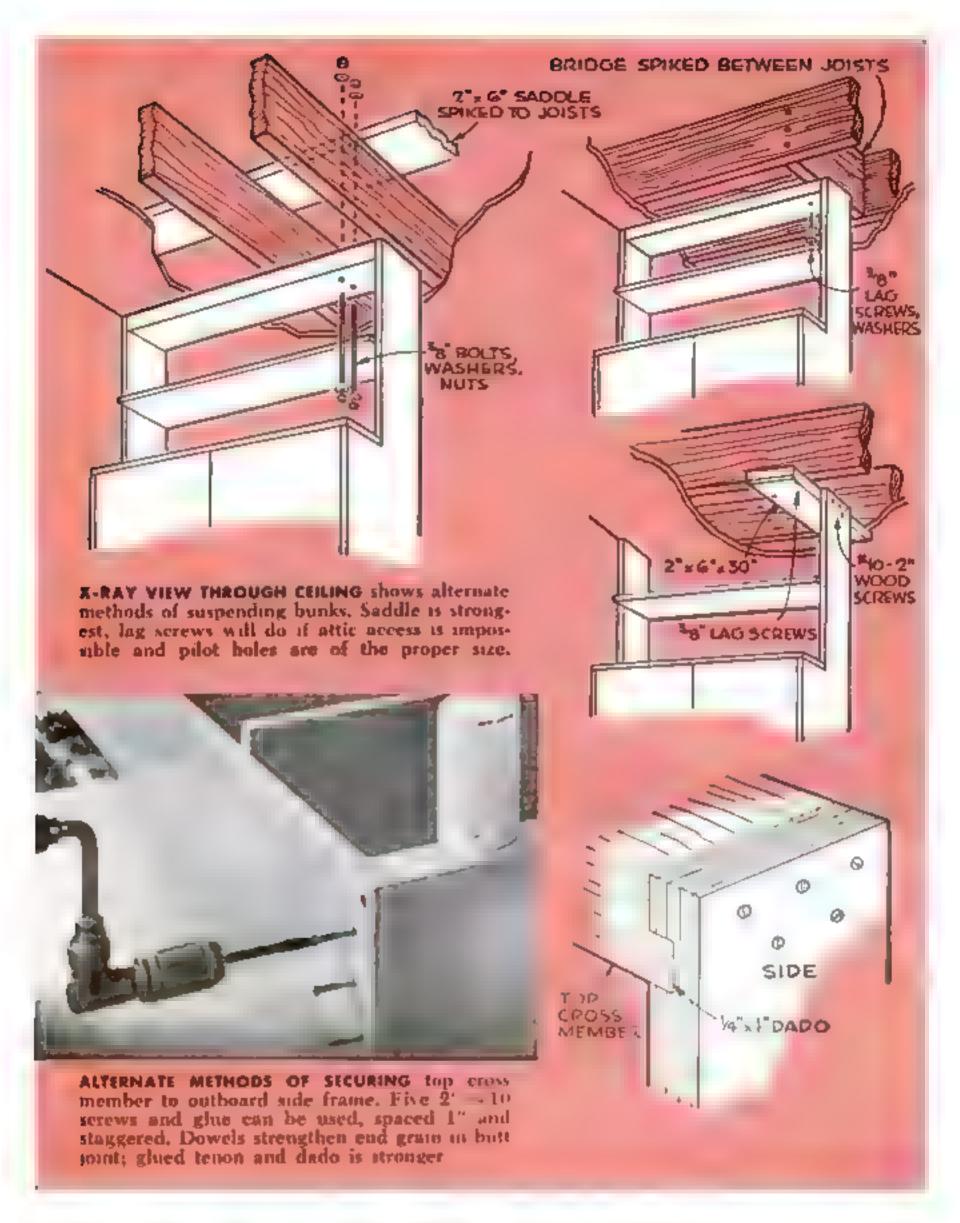
right, permanent seal in minutes. You can paint to match the frame.

For the ultimate in door-seal beauty, with no nails showing, get *deluxe* StanSeal. As easy to install and can be painted over, too

oducts Co.

*T rademarks

PORT CLINTON, OHIO



relocating the strips or nailing filler blocks to the stude between the strips.

What finishing the bunks need can be done before or after they're in place. Rub water-mix putty into the plywood edges, and then sand to hide sandwich effect. The open shelves' protruding corners may be rounded, if desired, before painting.

THE GEORGIA-PACIFIC CORP., Equitable Building, Portland, Ore., has made separate working plans available for this suspended bunk bed. If you like the convenience of working from such plans, write to Georgia-Pacific, as above, asking for the bunk-bed plans described in Popular Science Monthly.



Indispensable for home use... and never before priced so low! This compact, all steel, powerful SWINGLINE 101 staple gun is ideal for insulotion, carpentry, upholstery, screening, wire fencing, plus thousands of other uses. Handle locks to fit pocket. Lightweight, maneuverable, jom-proof! Staple sizes 1/4", 1/4". Send for FREE book-"Tips for Tackina".

Swinoline INC.



ONE AND TWO CAR GARAGES EASY INSTALLATION IN FEW HOURS

operator manufacturer's can now make this ... ILLNESS from getting out of car in those or this quality garage door operator yourself if you were able to buy each part individually you would pay much more than the untill cont of this lift.

This is the famous Edwards model KR 50 auignatic door operator WORKS LINE MAGIC. Profile bears project and Excelle door obsur-

One of America's oldest and largest door and closes automatically NO MORE COLDS. content original Locks door when closed matic light and quick disconnect device Edit ity operated manuality in case of power failure Complete with early step by step ansembly and installation instructions. Booky to use radio remote operals optional COMPANE the labelous offer FULLY GUARANTELD

FREE Interneurs on request

THLY 14914

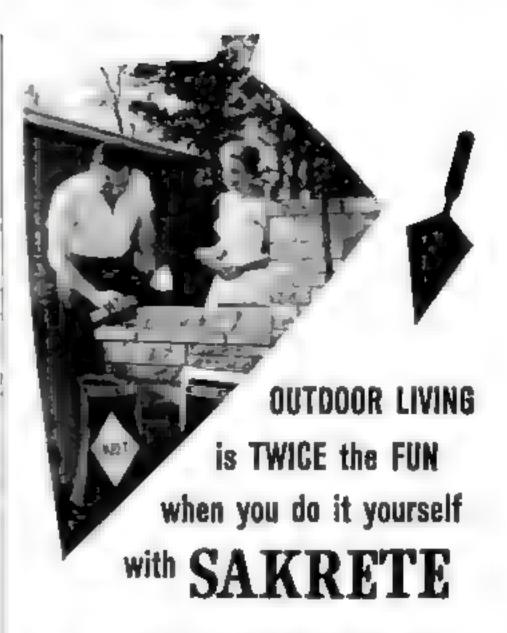
Mormalis \$ 15 installed! FOB Ypnkers, N Y

milh remote controls freguer \$225 value!s *9945

Send Check or Money Order

264 Wepp	getan d (b) - (i	COL NO. 109. Tirolini 103 56 pect 10. Upplió 1773.43 erec	01401	© Seve PRICE
>	_			
Street Gitty	_		State .	

MAIL COUPER LOGAT!



Picture your own backyard with an attractive patio, an outdoor grill, a handsomely-rugged planter. You'll be so proud of the "professional look" to these and many other permanent improvements to your home when you make them yourself . . . easily and economically . . . with SAKRETE! With SAKRETE Ready-To-Use Cement Mixes, you just add water according to directions on the bag . . . then follow the easy steps in the SAKRETE booklet for your favorite project. Anyone can build, patch or repair with SAKRETE!

FREE! From your lamber, harlding material or hardware dealer . . 32-page booklet with step-hy-step illustrated directions for six popular home prejects.

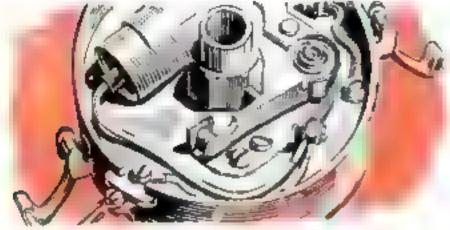
there's no substitute for

READY-TO-USE SAKRETE CEMENT MIXES

... In the bag with the YELLOW DIAMOND

@1959

Answers to Troubleshooting Quiz on Page 154



This is a trouble that can be caused by wear in the ordinary operation of the car. The rubbing block on the breaker arm is worn so the points are not opening enough. The gimmick used was to adjust point gap to .001 inch.

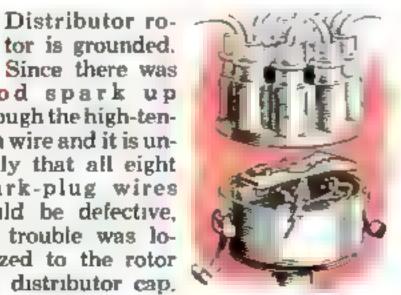
A defective ground cable or connection would cause this. A concealed insulating sleeve under the battery clamp was installed for the contest.

Either a grounded breaker-point arm or a shorted condenser could be the trouble. Sparking to the distributor terminal with the points open is the revealing clue. For the contest a steel washer was placed under the breakerpoint arm so that the arm was grounded

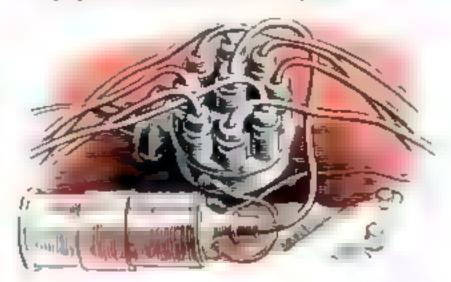


Idle passages in the carburetor were clogged, starving the engine unless throttle was open. The idle mixtureadjustment screws were screwed in tight to simulate this condition for the contest

tor is grounded. Since there was good spark up through the high-tension wire and it is unlikely that all eight spark-plug wires would be defective. the trouble was localized to the rotor and distributor cap.

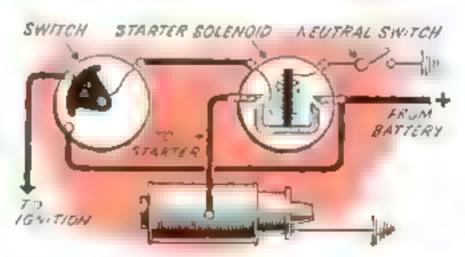


Gas feed line from the tank was clogged. There was enough fuel in the carburetor bowl to run the engine briefly. Applying pressure to the tank should cause enough fuel to flow to wet the paper if the line were open.



Two of the spark-plug wires were interchanged at the distributor cap. This is a well-known practical joke. Since the timing light is connected to number one cylinder and it had not been switched, correct timing was indicated

Engine is completely out of time. This is likely to happen only if you had taken the distributor out of the engine to work on it and failed to replace it correctly. Other possibilities are a stripped gear or timing chain. For the contest, the distributor shaft was given a half turn from its correct position.



The primary wires at the starter solenoid have been switched so that juice reaches the ignition system only when the ignition switch is in the "start" position. As soon as the switch is returned to "run," ignition is shut off.

Coil resistor is burned out.

HOBBYISTS: MAKE YOUR
HOBBYTHE
KEY TO A
REAL FUTURE
IN THE NEW
AGE OF SPACE

For you, the hobbyist, the Age of Space is the door to real opportunity, and your hobby is the key if you back it up with sound training. Here's the answer: train in the U.S. Air Force. Nowhere else will you find so broad and complete a range of Space Age specialty training. In the Air Force, the Age of Space is now. Day to day, Airmen work in rocketry, jet propulsion, guided missiles, advanced electronics and allied fields. Make your hobby your career. For full details, see your local Air Force Recruiter, or mail the coupon now.

6,1



PASTE COUPON ON POSTAL CARD AND MARL TO:

Airman Information, Dept. MPS-99 Box 7608, Washington 4, D. C.

The second section with the contract of the co

Please send me information on my opportunities in the U.S. Air Force. I am between the ages of 17-34 and reside in the U.S.A. or possessions.

Name

Address

City_____Zone_State___



How to Refuel a Power Mower

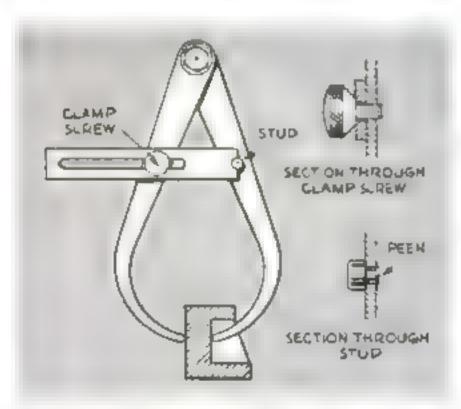
Don't refill your power mower on the lawn or on a driveway having a tarred surface. Spilled gasoline kills grass and also dissolves some blacktop mixes.

It's best to refuel over dirt or concrete. A piece of kitchen foil makes a throwaway drip pan.—R. M. Woodbury, Natick, Mass.



THOSE synthetic sponges you can buy in dime stores make good pin cushions. They require no preparation; just jab in pins.—R. Willey, Penacook, N. H.

PLEXIBLE plastic bottle makes a good graphite dispenser. But be sure to clean it thoroughly before putting in the powder.—L. F. Black, Cedar Rapids, Iowa.



Making Transfer Calipers

You can convert standard calipers to transfer calipers by fitting them with a stud on one leg and a sliding-clamp gauge on the other. Drill and tap one leg for the clamp screw and slot one end of the spacer bar to slide on it. Drill the bar's other end to fit over the stud and saw it off through the center of this hole.

When taking a measurement on work that won't allow for removal of the calipers without opening them, press the spacer against the stud and tighten the clamp. The calipers can be quickly reset after removal.—F. Murray, Chicago.



Cover for Lawn Spreader

You can use your seed and fertilizer spreader on windy or rainy days if you cover its top opening with an asphalt shingle. Fold the ends of the shingle to fit tightly over the top. It will keep the contents from blowing or getting wet.—
R. M. Watson, Athol, Mass.

▶▶► Most automobile jack handles double as a lug wrench and a pry for removing hubcaps. If you want to avoid nicking the wheel finish when prying off a hubcap, wrap the fulcrum with rubber or plastic tape.—Leland Valaske, Green Bay, Wis.



PONTIAC IS THE ONLY CAR WITH WIDE-TRACK WHEELS

Wide-Track Wheel design brings car and road into a new relationship. The wheels of a Pontiac are farther apart, widening the stance but not the car. There's a feeling of complete control, road-holding response. You're steadier, more secure, balanced. It's the automotive advancement of the year and one of the big reasons Pontiac is now first in sales in its price class. Hasn't the day come for you to drive this sleek beauty? The keys are waiting at your nearest dealer. Pontiac motor division. General motors corporation



THE WIDE-TRACK STORY

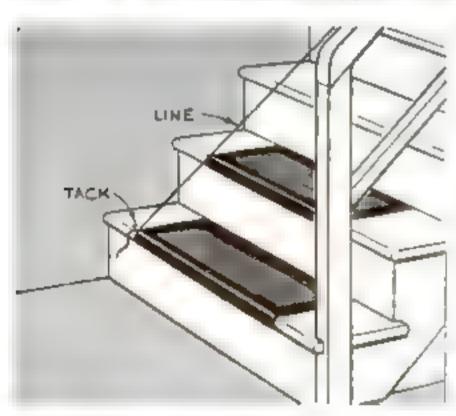
Pontiac wheels are five inches forther apart. This widens the stance, not the car. Lower center of gravity makes the car grip the road. Lean and away disappear You get safer cornering, easier handling, a steadier, balanced, smoother ride.





Uses for File Handles

File handles come in handy for mounting tools other than files. I recently put one on my drill-chuck key and another on the old straight-edge razor I use for fine cutting. With eyelet screws in the ends, they hang conveniently over my workbench.—R. H. Herhold, Sheboygan, Wis.



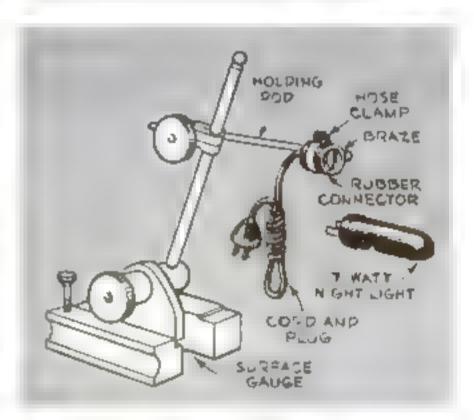
Aligning Stair Treads

When I install stair treads, I make sure of perfect alignment by using a line guide. Procedure is simple: Place one tread in position, measure the distance from the wall, and mark it off on three steps—at the top of the stairway, in the middle and at the bottom. Run a line touching these points, anchor with tacks, and lay the treads to conform.—Daniel Bousha, Jackson, Mich.



Throw-Away Paint Funnels

IF You keep a supply of cone-shaped paper cups in your workshop or garage, you will always have at hand a good funnel for pouring paint, turps, oil, varnish and the like. Snip off the end with scissors. Discard the cups after use.—Mrs. Edwin Johnson, Iron River, Mich.



Portable Shop Lamp

An OLD standby with pro machinists is this method of rigging up a convenient shop lamp from a surface gauge. Braze a hose clamp to a rod of the diameter of the scriber; it holds the socket end of the lamp cord. Then insert a seven-watt night light of the kind sold at supermarkets and hardware counters. The lamp will put light in hard-to-see spots.—R. B. Courtney, Whittier, Cal.



How to care for your automatic transmission

- 1 Apply your parking brake or keep your toot firmly on foot brake before starting engine or shifting automatic transmission from neutral into any driving range.
- 2 When a red light stops you on an upgrade, apply either parking or foot brake, then shift transmission into neutral. For a wait of only a minute or two it's permissible to push the gas pedal down just enough to make the engine "hold" the car on the grade.
- When driving downhill, never shift into neutral and allow your car to coast. This is illegal, and also dangerous.
- 4 Make sure you are completely stopped before shifting from "drive" to "reverse."

- 5 When you leave your car, make sure ignition is turned off and key removed, the parking brake set tight, and gear selector set at "park" or "neutral."
- 6 Never have car pushed or towed without first making sure the procedure being used is correct for your make of car.
- 7 Be sure you're using the finest automatic transmission fluid money can buy... and that fluid is up to proper level. No problem when you're a Texaco motorist. For Texaco Dealers service your car with Texaco Texa-

matic Transmission Fluid and they are trained to check fluid level regularly.





TWELVE NEW DIAL TEST INDICATORS,

new Vernier Calipers, new Flat-Rod Depth Mike, new 5-Power Magnifier and many more new and improved precision tools with exclusive features are pictured and described in this new Lufkin catalog.

GET THIS CATALOG TODAY from your industrial supply house or by using the coupon below.

LUFKIN RULE COMPANY
SAGINAW, MICHIGAN
Please rush me acopy of "New Lufkin Tools".
Name
Address
City and State

Cars That Never Need a Grease Job [Continued from page 83]

one of the slipperiest substances known; it has a lower coefficient of friction than graphite. Rubbing Teflon against Teflon is like rubbing ice against ice.

But the ordinary way of making plastic bearings—by casting or extruding the resin to shape, the way you'd make toothbrush handles—didn't work too well with Teflon. The bearings were okay for light duty, but heavy loads squeezed

them out of shape.

The researchers found a way around this. They made the Teflon into fiber, like rayon (the process is similar to the drawing of steel wire) and then wove the fiber into fabric. You could tailor a suit out of it if you wanted to (it would look funny but never wear out). The Teflon fabric has 25 times greater tensile strength and resists deformation under load 30 times better than Teflon resin

This fantastically strong and slippery fabric serves as a lining to separate moving metal parts. The fabric is bonded in the socket of the bearing, and the metal ball slides in the fabric cup. No other lubricant is needed, and it should last

longer than the car.

50,000 greaseless miles. Impressive results came from tests on six 1958 taxicabs in Baltimore. Teflon bearings replaced the four ball-joint suspension bearings and seven steering bearings on each car. After 50,000 miles with the greaseless bearings, the test cabs were still perking along happily. An identical group of 10 cabs running the same mileage with conventional bearings needed 36 grease jobs.

Drivers of the no-lube cabs commented repeatedly, and happily, on the improved ride and handling performance. Several said they were less tired at day's end

Dupont backed this up with controlled, instrumented tests on a '59 Chevrolet. First the Chevy was run with lubricated standard steel bearings. Then these were replaced by fabric bearings and the tests were repeated. Wheel fight was reduced and steering was smoother. Many annoying chassis squeaks disappeared.

It's all part of the engineers' dream: a car that needs no service ever. They would like to fix things so that all you have to worry about is keeping the gas

tank filled.-Ken Fermoyle.

PREFERRED

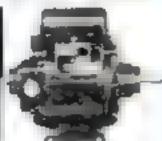
by Leading
Appliance Manufacturers

NOW AVAILABLE TO YOU!









MOTORS

First choice of manufacturers for 68 years! Now you can choose from 21 different designs from 34 to 1 H.P. Write for free catalog No. M-721. The Emerson Electric Mig. Co., St. Louis 21, Mo.

EMERSON-ELECTRIC

of St. Lauis ... Since 1890

that most home owners use!



KESTER SOLDER

For your electrics, work, rad o-TV, do-it-yourself projects a ways use the best . . . MESTER SOLDER. Send for FREE 16 page book that tells you how!

KESTER SOLDER COMPANY

4254 Wrightwood Avenue + Chicago 39, Illinois

OVER 68 YEARS EXPENIENCE IN SOLDER AND FLUX MANUFACTURING

Automatic Saw Set ...

MAKE EXTRA PROFITS !

Set 400 teeth per minute on hand or a band saws, 4 to 16 point, with the BeMaCo Automatic Saw Set. Fast, accurate, true harmer-anyll action sets teeth uniformly, aliminates tooth breakage.

formly, aliminates tooth breakage.
Used profitably by saw shops and
manufacturers everywhere Every
machine positively guaranteed!

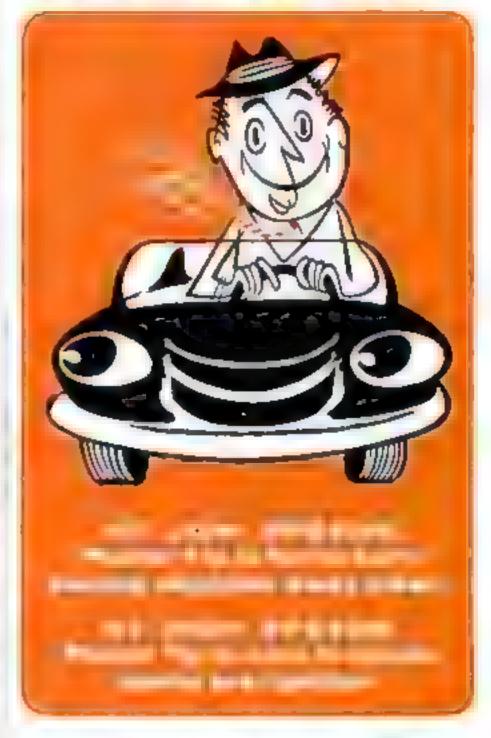
Write for details-today!

Saw Machine Division 39-S

BEAVER MFG. CO.

#O Box 434 800 ISIS AVENUE * INGLEWOOD, CALIF.

AUTO-LITE RESISTOR SPARK PLUGS WITH PUWER TIP



"FIRE UP" AT ALL SPEEDS WITH AUTO-LITE» POWER TIP



[Continued from page 75]

"and that speed would be much greater if all three lanes were used "

He pointed at a car that was pulling away slowly from the toll gate. "Slow acceleration is another cause," he said, making the same point Wells had.

He slipped the Ford into low gear and we buzzed away from the toll gate, headed toward the Harriman interchange. There, vacationers from the Catakills and Adirondacks were pouring onto the Thruway from Route 17.

It was 5:05 p.m, when Barber called the interchange for the latest count.

A flat voice rasped, "Just over 4,000, Seven Zero One."

Traveling in packs. On the long upgrade from Suffern, he pointed over to the heavily traveled southbound lanes. The cars were cruising in little groups with long gaps between the groups.

"We took motion pictures at several places," he said, "and we found that traffic moves like an accordion. It squeezes up, then spreads out; it slows down, then speeds up. If drivers closed up the gaps and held a constant speed and distance, there'd be far fewer bottlenecks."

We bore north, looking for openings in the middle and center lane and cutting quickly into them to pass. At Harriman, we pulled to the side and watched the cars feel their way cautiously out of Route 17 and into the southbound stream.

Traffic had begun to back up on both 17 and the Thruway. Lt. Barber said, "There's another cause for your snarls. Weekend drivers just aren't used to highway speeds. They drive in the city at 20 all week and they're afraid to take advantage of the Thruway's 60-mile-anhour speed limit,"

He eased the Ford around the cloverleaf, dipped smoothly into the southbound lane, and started working his way back toward the Palisades bridge. Though well within the speed limit, we passed one car after another. I could see that to take advantage of the Thruway, you have to work hard when traffic is heavy. But it pays off—until you get trapped.

A mile ahead I saw the frantic blinking of a trooper's warning beacon. Barber stretched to look.

"There's a good example of what causes bottlenecks," he said. "That disabled car is well off the highway. It's not in our way, but we're trapped. Every driver slows down to see what the trouble is. Each driver slows down the one behind him a little more, and traffic slows almost to a stop. And they'll all take their own sweet time accelerating once they get by."

Keeping moving. "It's a good rule, then, to keep moving," I said, "especially coming out of toll gates, climbing hills, entering traffic, or passing disabled cars."

"Right," said Barber. "Maintain speed consistent with safety and you've got it made."

Wells' voice cut in. "I'm on the bridge at the Palisades Interstate Parkway intersection," he said.

"We're on our way," said Barber. He put down his mike. "That's where we get our biggest jam," he said. He looked at his watch. It was 6:15 p.m. "By now," he said, "they should be backed up two miles there."

They were.

It took us 20 minutes to fight our way to Wells from the milepost where we had ground to our first stop. By the time we reached him, six crews had strung traffic cones along the inside track of the north-bound highway from Route 303 to Harriman. Wells had given the order to divert some of the overflow into this fourth "lane" on the far side of the mall.

"We can push a thousand cars an hour through that extra lane," said Wells, "It's a new experiment that is paying off."

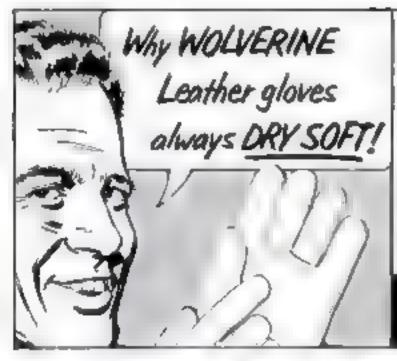
He pointed down the long grade that dropped away from us southward to a steep rock cut, then started up again toward the Route 303 intersection.

"Right here," he said, "we have a combination of problems. Drivers feed in too slowly. Then they slow down at that rock cut. Finally, they pick up too slowly on the upgrade.

"Actually, the Thruway is just as wide, just as safe, and just as easy to drive here on this stretch as it is anywhere else. Yet look at the jam-up."

It was hard to swallow. For a long while I didn't believe it. I waited for a report to come in saying a four-car accident or something worse had blocked all four southbound lanes somewhere south of us. But the radio droned on casually.

Off to the north, the sky was darken-

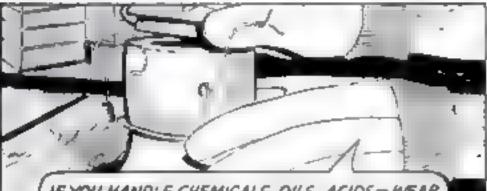


Wolverson's secret triplelooning process loos esturally tough hersekide and pigskim super soft to stay soft-even dry soft after sooking.



CHECK THESE FEATURES





IF YOU HANDLE CHEMICALS, OILS, ACIDS—WEAR THIS NEW PLASTIC-COATED FABRIC GLOVE WITH KNIT WRIST, TOUGH, FLEXIBLE, LONG-WEARING

Once you wear em, you wan't be without 'em! Al ctores everywhere.



GET SURE GRIP OF THE WHEEL, FREER ACTION WITH SOFT FULL-GRAIN HORSEHIDE GLOVES KEY-STONE THUMB ELIMINATES CHAFING, GREAT FOR HANDYMEN, TOO!



aure two extraner place his commensus sic ed Jones P # \$ 0 outlink rivette by kn H P 14" L n D g 13 V12 1 10 C 357.8 13 11 -Govern paid #200 mi

OUR PRICE F.O.B. Chicago ... High pressure Air Receiver Tank for compressor, 2 ibs. \$4 00 Pressure Gould's O to 2500 P 5 1

Yelus-packed popes of war surplus and newly mater forest equipment—Bargains for form, home, factory,

warkshop! WRITE TODAY for your free copy!

STEEL

Idea) for compressors the inflators fleats hope- polest on chambers, hydrable reservoirs fuel containers duri and in its containers etc.

Strong! * Light-weight! * Used as aviator

BARGAIN-PRICED FOR FAST SELLINGI





Capacity 300 cu to tappens date) 450 b. P.S.I. L.P. act. back cod 24 length 67 d.a.

TYPE 0-5—STAINLESS STEEL

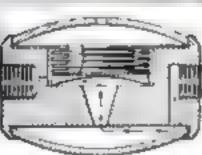
(mport) 2) Pro Procedure Organia
4 Nr 1 Procedure Organia
24 tempera 12" dis Mgt 10 the

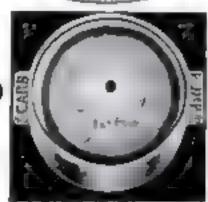
Charles S14.95 cc.

GUARANTEED to stop curbarator pulsation, vapor leck, meter stalling, spitting and jerking.

GUARANTEED

to deliver hip gas savings, mare mileago, maximum power and fer factor starts.





FR SAVES GAS-STOPS VAPOR LOCK FR Fuel Control is not a gadget—but a

scientifically proven gas regulator and saver. Guaranteed 100,000 miles. Sealed unit no glass— brass bellows. Easy to mstall in 15 minutes. A "must" for cars, trucks. Only \$5.95 ppd. Money back in 30 days if not satisfied. Order yours today!

TRUCK PLACT DYMER:

STOCK CAR CHAMP:



Fit Fuel Control Co., Dapt. 4, Linthicum, Maryland

Enclosed find \$5.95 for FR Fuel Control NAME

ADDRESS. att.

ZONE _ STATE



You can cut perfect holes, at minimum cost, from 9/16" through 6" in diameter in steel, brass, bronze, cast iron, aluminum, wood and plastics with STARRETT SAPE-FLEX High Speed Welded Edge HOLE SAWS. Easy to use with portable power tools, lathes, drill presses or other machine tools. They are made of high speed steel with a shatterproof body and rigid steel cap. Equipped with a 14" pilot drill and a choice of 7/16" or 16" hexagon or 16" round shank.

Starrett also makes a complete line of finest quality Hacksaws, Band Saws and Band Knives for every cutting purpose. See them at your Industrial Supply Distributors, Hardware Tool Store or send for Blts, PRES STARRETT CATALOG. It describes and Illustrates these and over 3,000 other Starrett Tools Send the coupon today.

ne nd			17	
में गर वी-		Bag e	Total	3
le id				ľ
A STATE OF	C		*	
7-				

THE L. S. S Dept. PS					-	***	•
Please send	l my free	copy of	ithm bli	s new Sta	erett Col	glog No.	27.
Name							
Оссыратол			40000				
Address							
Сйу			4	Zone	State		

Those Awful Turnpike Tie-Ups

ing. In two minutes the radio crackled, "Heavy rain south of Spring Valley." We watched the storm sweep toward us, then raced for the Olds.

At 8:00 p.m., the rain was still droning on the roof and it was getting dark. Wells looked troubled. "It'll hurt a little if it keeps raining after the sun goes down," he said. "Darkness alone doesn't slow us much, but when it rains at night, they drive pretty slowly—as they should."

With almost hypnotic fascination, we stared at the slowing cars beneath us. More than 5,600 an hour were being fed into the Thruway at Harriman now.

"It'll probably be stop-and-go until 10:30," said Wells. "Then they'll gradually speed up. By 1:30 in the morning they'll be humming through at 55."

"And those drivers are making their own trouble," I said. "Your films and still photographs—do they show the Thruway could handle this load? That is, if the drivers themselves kept pressing and used the right techniques?"

"Right. There's nothing we can do about it. If the drivers keep moving, there are no bottlenecks under normal conditions. It's the same on every modern turnpike and expressway in the country."

"Sure. They're learning to drive the expressways now. We took in 10.2 million more toll payments in 1957 than we did in 1956, yet our fatality rate dropped from 2.68 to 1.94 per 100 million miles."

Into the mainstream. At 10 p.m., I climbed into Lt. Barber's patrol car to pick up my station wagon two miles further south. Slowly, maddeningly, we inched into the mainstream, then past the "forbidding" rock cut, and up the gentle grade to the Route 303 intersection.

"It's hard to believe that drivers in a hurry will let these three little things cause a five-mile traffic jam," I said. "There must be something up ahead that we can't see."

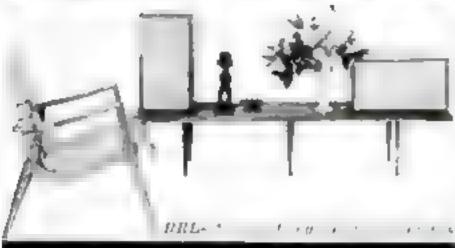
"If there were," he said, "we'd have heard about it on the radio."

I thanked him for the lift, and then, after he had gone, I scrambled up the high bank in the rain and looked south to see for myself.

Lt. Barber was right. The road was clear.

254 POPULAR SCIENCE SEPTEMBER 1959





Three new systems of highest quality... priced to fit the tight budget . . . styled to match the wife's decar. For maximum flexibility and convaniance, each is fine-furniture finished on four sides . . . for use as highbay or lawboy on backshelf, bench, or built-in. Full details are in new edition of "informative guide to high fidelity stereo and monophonic speaker Systems and components." With to Desk B-2, University Laudspeakers, inc., White Plains, N. Y.

NEW "PUSH BUT



PARPORMS HUNDREDS OF JOBS SAFELY

Blade locks in two cutting positions.
 Safety retractable blade.

The Andy "Push Botton" Utility knife is perfect for hobbyists. sportsmen and tradesmen. It is versative, (we cutting positions), it's safe retractable blade allows you to carry the Andy knife in your pocket) and it's rugged (belty, man sized fee). East in gleaming aluminum, this Andy knife has 4 extra blades in the handle. These biades are reversible and both ends may be used before discarding. Available at your hardware or fumber store. If you can't find it there, send us \$1.65 (check or money order) and we will be happy to send you one. Postage prepaid Replacement blades available at 60c for a box of 5

ANDERSON TOOL & MFG. CO.



HUOT ROLLING TOOL CHEST

PROTECTS YOUR VALUABLE TOOLS



MODE.

Goes where your work is! It's a bandsome professional piece of rquipment!

This complete rolling cabinet is ruggedly built of heavy formed and welded steel for permanent service on the job or in your home workshop. Three top drawers are cork-lined for precision tools-two heavy duty bottom drawers are extra deep for power tools. Complete with built-in lock.

Write for free bulletin showing this and 12 other models! HUOT MFG. CO., 532 N. Wheeler St., St. Poul 4, Minn.

It's like employing your own personal mechanic to keep your engine always at its best

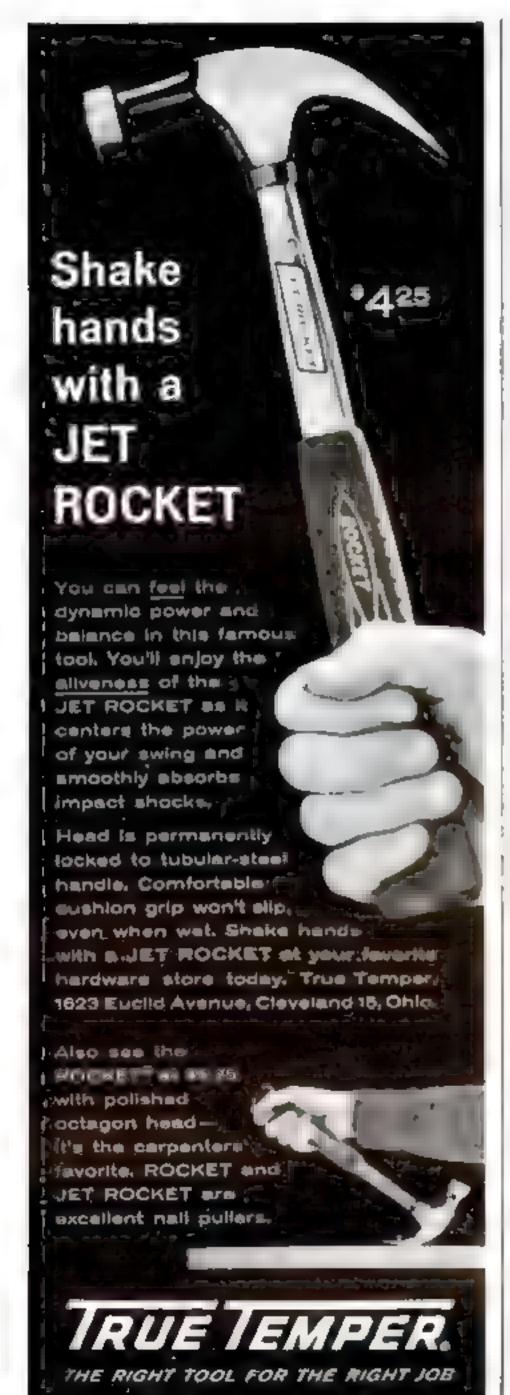


The superior lubricating qualities of Kendall SuperB mean less wear, less need of repair. Oil and gas mileage go up. Noise level goes down Driving is more economical, more enjoyable with this All-Weather SAE 10W-30 oil refined from the choicest 100% Pennsylvania Crude Oil -richest in the world,

Ask your favorite dealer for it now

KENDALL REFINING COMPANY BRADFORD, PENNA.

> 1859 - Gelebrating a Century of Oli Industry Progress-1959



Secrets of the War Against Time Bombs [Continued from page 81]

trip the switches. One officer solved this by playing a steam hose on the fuse boss to discharge the condensers.

Taking dares came easy to men who lived on a razor edge of death. A cautious subaltern, finding a new fuse, went off to study the latest bulletins. Removing the fuse next day, he found the gaine missing, in its place a birthday greeting from two brother officers.

Among the most memorable of the early disposal experts was Lord Suffolk, a peer who turned up at many bomb sites during 1940 and early 1941. Arriving in state in his limousine, Lord Suffolk was invariably accompanied by his chauffeur, to assist with the tools, and by his secretary, to take dictation in case something new was encountered. Their narrow escapes earned this trio the name of The Holy Trinity.

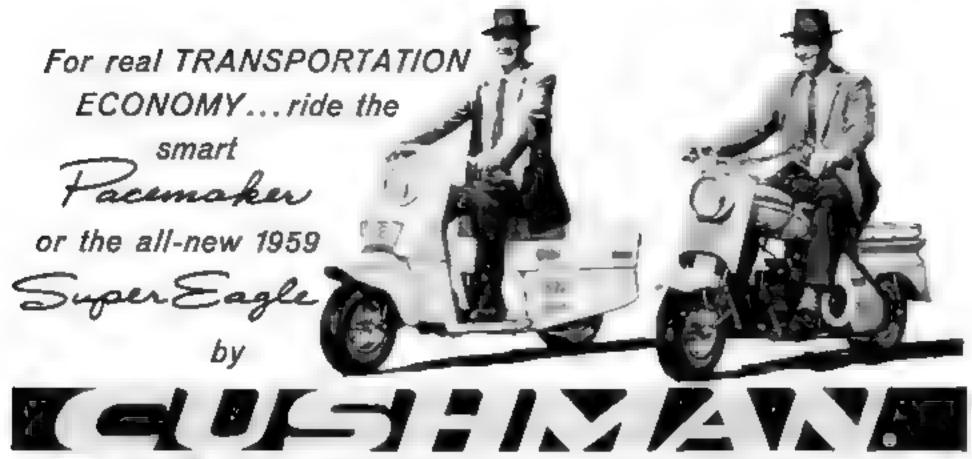
Typical of Lord Suffolk was his method of stopping one delayed-action fuse. He fired a bullet into it. (The Germans countered by inverting the clock so that the bullet would hit the cap.) But in May, 1941, after many months of successful defusing, the Trinity's phenomenal luck ran out. A 250-kilo bomb killed the gallant three, and five others.

How did disposers identify the fuses they were up against? By the German markings, One new symbol might be the warning of a dangerous modification, as Captain F. Carlyle lived to discover. Finding a jammed fuse that seemed routine except for an extra "Y" on the mark, he bashed it out with hammer and chisel But something new had been added—a dry-cell circuit with three mercury switches so arranged that a tilt in any direction would close one. All that saved Carlyle's life was a break in the wiring.

Discharging fluid, pumped into this fuse, fired the battery circuit. The ingenuity of Major J. P. Hudson licked this one. He froze the dry cells by pouring liquid oxygen around the fuse head. Chilled, they couldn't energize the circuit.

Equally clever was a dodge that stymied clockwork and mechanical booby traps. An air pump was used to create a partial vacuum in the fuse pocket; then fast-setting plastic was injected.

Do-it-yourselfers were sometimes a menace. Asked by an old lady to remove



Ruggedly-built Cushman Scooters take you anywhere, everywhere (they're easy to handle in traffic, easy to park). Figuring operating costs, maintenance and depreciation, you really save with a Cushman. Famous Cushman Husky 4-cycle engine delivers up to 100 miles per gallon at speeds of up to 50 miles per hour. Cushman Scooters are so smartly styled, the entire family will enjoy riding.

> Ask your dealer for a FREE demonstration ride or write for new colorful booklet today.

Sold and serviced nationally . . . Replacement parts immediately available.

Dealer leguirles invited.

CUSHMAN MOTORS

A subsidiary of Outboard Marine Corporation 929 No. 21st, Lincole, Nebraska Places sand FREE Scentur banklet

BAME			
ADDRESS.	 	 	
CITY		STATE	

HERE'S A MONEYMAKER

make from \$3 to \$6 an hour with the FOLEY SAW FILER

Ask yourself these three questions: 1. Do I really want to get ahead faster ? 2. How can I do it? 3. Am I willing to use my spare time? If you answer "Yes" to questions 1 and 3—then we have a positive answer for you on No. 2. Men make from \$3 to \$6 an hour sharpening hand, band and circular saws with Foley Saw Filers. No experience needed, to turn out sharp, smooth-cutting saws with this automatic machine, Start in spare time no canvassing.

HERE'S THE WAY TO START

Read "Money Making Facts"-shows you how others have added hundreds or thousands of dollars to their incomes in this steady, repeat, CASH business. Start your own business in your basement or garage, no overhead, small investment. With Time Payment Plan the Foley can more than pay for itself out of profits. Send for "Money Making Facts"—mail coupon now. No salesman will call.

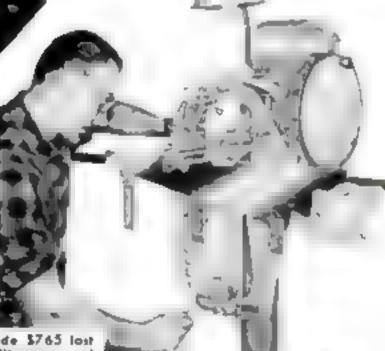
HERE'S PROOI

"When Mr. Patrick gat his Foley Saw Filer in March 1946 he made a good and wonderful investment. He has done o well that a bought a house and paid for it, bought a new car, built an addition to over d's all paid for," Mrs. Leslie Patrick. Hough.

"I mode \$765 lost year filing saws, and if sere comes in handy I do the work in my spare time - James B. Widions

"Last year's profil amounted to \$2,000 Not so bad house. Nicest of all, for a one-man out-

"I have done 4 or 5 thousand saws in m spare time in the 4 1/2 years since I got the outfit, and they are all coming back fit,"-Charles C. with repeat orders." Len Crego.



FACTS

i	FOLEY MFG. CO., 919-9 Foley Bldg., Minneepells 16, Minn.
	FOLEY MFG. CO., 919-9 Foley Bidg., Minneepells 16, Minn. Send me free book "MONEY MAKING FACTS" and Time Payment Plan.
	NAME
	ADDRESS



"part of a fallen plane" from her back yard, disposers were shocked to find an eight-foot-long parachute mine at the foot of the scullery steps. They were more stunned to see that the householder had built wooden steps over this sensitive horror "to get to the coal and dust bin." With far less aplomb, the disposers tore the structure down, flinching each time a nail squeaked. When the mine was eased over, the clock started. It ran 12 of its 17 seconds before it was gagged.

Another independent soul, finding his house under guard because a bomb had crashed into it, argued his way in. The bomb was sticking out of the kitchen floor. Lifting the 112-pounder, he went out the back door and dumped it in a park. He was fined three pounds.

It's not yet over, this suspense story of men battling the ferocious ingenuity of men. Last April a live one-tonner was found under a building site in the heart of London. Just this July, workmen unearthed a 500-pounder with dual clockwork and a booby trap.

Working in a 14-foot hole, disposers steamed out all but three pounds of the main charge. When detonated, this small residue broke windows in a 150-foot radius—a grim sample of what had to be endured in the blitz.



QUADRUPLE PLANTER. Front wheels are 120 inches apart on the experimental axle of the tractor above, the rear wheels centered at 40 inches. International Harvester expects the setup to be useful for seeding four rows at once with a trailing wheel-track planter. Aim is to cut soil disturbance to a minimum.



SUPER OIL

The very finest lubricating oil genileble for mechanics, wetches, sporting goods, sowing mechanics.





SHEET METAL MACHINES

Brakes form angles, locks, pane, etc.	Quick
eccentrio clamp. All steel constr	netlon
15" 16 gauge steel	
36" 23 sauge steel	
48° 24 gauge steel.	\$52 00
Finor stand	\$ 8.00
15" 14 gauge Folder	117 30
36" I'an and Ros brake	\$60 00
a 7 Adoptable Bender	\$14.50
16 gauge 7" Bench Shear 3 adi, gauge.	
24° Repch Bhear, hand guard.	\$42 00
GRURR DINECT OR SAND FOR PRICE CA	TALOG
WYKE MFG CO., N-4158 Jacon St., Deaver I	1 Cale.

FREE POWER TOOL CATALOG

Get the right tool for the job! Write

World's largest maker of electric tools

P 34

Black & Decker



and spray

Built-in motor' Just pull trigger and spray paint, varush, enamel, inaccticides and garden aprays 3 to 7 t mes faster' Sapphira noszle, quick spray adjustment. Fully guaranteed Now at dealers . everywhere t

BURGESS VIRROCRAFTERS INC., Grayslake, Illinois



- (most popular haz sizes).

 (most popular haz sizes).

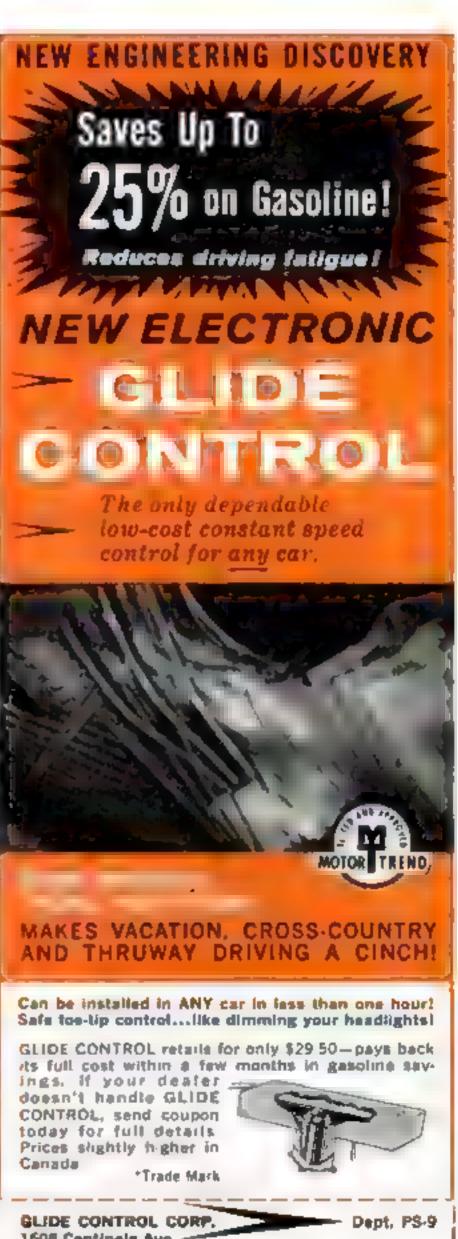
 Busutifully polithed chrome
 shafts with new super hard
 - special with new super narg sockets.

 Beautifully colored, extra comfortable, plastic bandles to dif-
 - ferent color for each size).

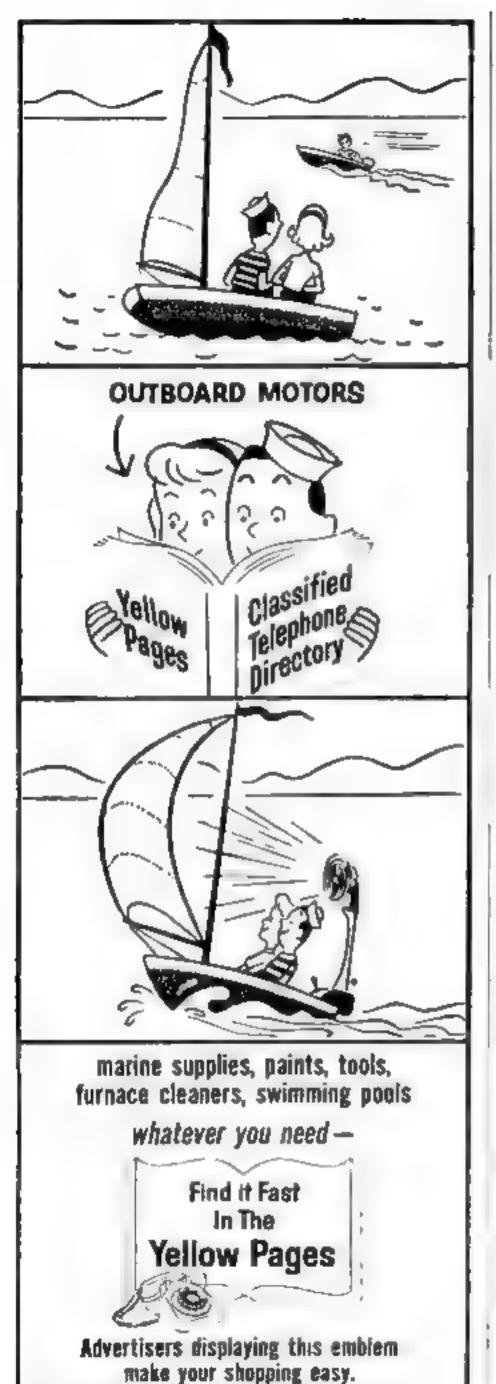
 "fewel Case" packaging in twotone plastic storage box with

At Butter Stares Everywhere or Write. Four Color Catalog Available

VACO PRODUCTS COMPANY, 321 E. Outario St., Chicago 11, Wineis



GLIDE CONTI 1608 Centinel Inglewood, Ca	a Ave.
Please rush fu	Il details on GLIDE CONTROL performance.
Address	
City	State
Law - Jah - I aa-) 🗍 Distributor 📑 Retuiler 🗍 Private car owner



New Clutches for V-Belt Drives [Continued from page 14:]

sories and tools, take a big gulp of current when starting. Overloads make them blow fuses, dim lights, or even burn out. A centrifugal clutch instead of a plain pulley on such a motor lets it start freely, and shoulder the load when under way and able to do so.

A clutch may enable you to make do with a smaller—and cheaper—motor than would otherwise be needed. If a large motor dima lights or blows fuses on starting, or an undersized one labors heavily to get going, an automatic clutch may be the answer. It will also serve notice of momentary overloading (taking too heavy a cut on a power saw, for example) by declutching. Remember, though, that a clutch will boost only the motor's starting ability, not its full-load or running capacity.

Low line voltage, which makes motors hard to start under load and is a cause of burn-outs, is another good case for using a clutch. It minimizes the trouble-

some starting drain

During a hurricane that downed electric lines, a home owner found his gas furnace useless because the circulating blower was motor-driven. His 700-watt emergency generator would not start the split-phase motor. But with a centrifugal clutch on it to ease the starting burden, the generator got the motor up to speed, then handled the running load easily.

Changing drive ratios is the function of ingenious transmission pulleys. These too have sliding flanges, which move apart to drop the belt to a smaller diameter for heavy loading, or move in, shifting the belt to a larger diameter, as the engine speeds up in easier going.

Some of these pulleys act as a clutch besides—they open wide enough to let the belt ride free between the flanges. Others do not, but keep the belt pulling

even at low shaft speeds.

One popular clutch-transmission unit has a shift range of only 1.6 to 1. But in conjunction with the usual second reduction step in a riding tractor or small car, this provides a very effective ratio change. If, for example, the countershaft has a 5" driven pulley and a 1 to 4 ratio to the drive wheel, the overall ratio will vary from 1:10 in "low" to 1:6.2 in "high".

Since the effective pulley size varies,



2 or 3° on the

Trucks

Boats \$5.90 Typewriters \$6.00 Compressors \$9.69 Generators \$4.76

You BUY DIRECT from U.S. Government at TREMENDOUS savings. I commate middlemen - Save BIG MONEY Pay as LOW as 20 on the dollar Our DIRECTORY Gos I Surplus Sales lists 100 s Army News Air Force Surplus Depots all over the world BUY JEEPS sports equipment hunting fishing and photographic equipment and supplies radio electronic and electrical equipment trucks boats simplanes. Plumbing. hardware office equipment & supplies Tools machinery forniture. This 1959 book tells how to buy Gov t Surplus DIRECT No dealer profits to pay. Get on the gravy train NOW! Send \$1 TODAY for AVIATION SURPLUS, Dept. PS-3, Box 789, York, Pa. "Gov t Surplus ourictory" to AVIATION SURPLUS, Dept. PS-3, Box 789, York, Pa.



Boat Plans 8 - Over 50 Models Pre-

Runabiute Cruiere Field 91 Anyone can assemble. replice Marine Accessories Fiber-CREDIT it nos it astica, Trancesi. Paint ele Latterna Profeb frame fit a

FREE FREIGHT—SAVE 🏰 BLACK PUR SCHREIBER CASALLISE CRAIG-CRAFT, Tonawanda 1M, N. Y.



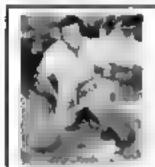
DRAINS cellum, aictorns, wash tubs: irrigates – circulates – sprays

PUMPS, Beile Mead 3. LABAWCO

WATER SYSTEM Compressiy Automatici 49.95 Tree

With the HP mar : \$40 DB Brother ! est Prime 7 PH

25 40 Dec Free Circular



FIND BURIED TREASURE

GOLD allier, comps, jeweler strongbowes, battle relies M. St. OPE, i apassi serial i et Come Technic Metal Local schedule of all land with wine Evening' Regarding Laurenteed Laglanetish super sensi-From \$39.50, Easy Torms, FREE catalog.

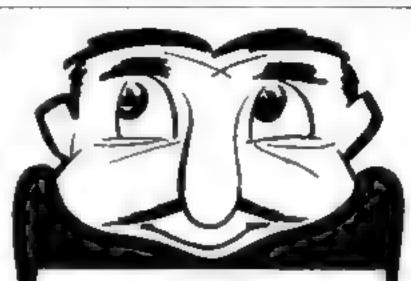
FISHER RESEARCH LAB., INC.

Dept PS-3, Pole Alto, Colif



SEE PAGE 178 FOR ALL SPLIT-LEVEL CONTEST DETAILS





Handles for Glass, yet!



Unless in the glass busipay \$11 50 for this Red Devil Vacuum Grip Glass Holder that makes it easy to lift and place sheets of

glass, steel, marble or anything smooth and heavy. But now you know how they do it.



it's Practically Impossible to burn fingers hark knocklet of you ove a Red

Devil Burn Of Knife with Long handle and good stiff blade. The largest of the generouse but \$1.30 he why do at the bard way? Good for accompany flours mader radiators, too.



Why Didn't They Think Of It Before? Polymenthane part attached to a good handle makes a Red Beerl SP3 Screen

Painter You dip it in a shall low paint pan, wipe the screep with it and Job t done The rost' Just 204 presto



Sign Of A Good Point Store. Buy pa at only where you see one of these red mach ner It's a Red Derft Paint Cambitloner and for it the dealer hand about \$150 so he can shake your paint

into factory fresh suspension to save you stirring or filend colors to your taste

It a always best to key where fird Devil Tools ner sold for wider choice, top quality, and correct "how to " advice

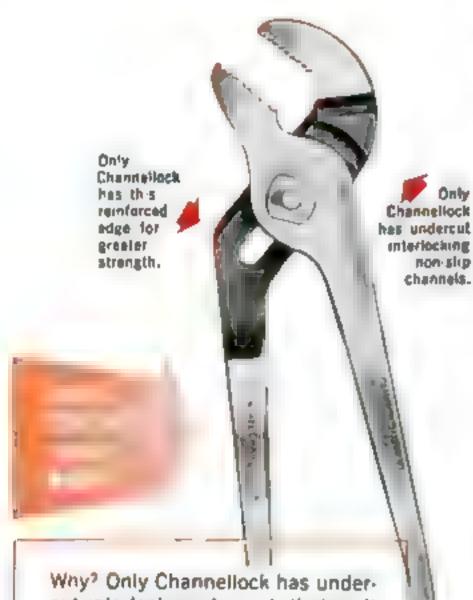
> free booklet "How To Fix Broken Windows." Address Dop't, D-9

4173



World's largest manufacturar of pointers' and planters' tools,

Be sure it's a genuine CHANNELLOCK



Why? Only Channellock has undercut, interlocking channels that can't slip no matter how tight you grip. Only Channellock has the reinforced tension edge to withstand maximum gripping force. These exclusive features have made the Channellock No. 420 the first choice of skilled mechanics everywhere. So be sure you get only genuine Channellock pliers. Look for the trademark on the handle.

ASM YOUR TOOL SHIPP JER FOR CHANNELLOCK PLIERS - BY MAME



CHAMPION DEARMENT TOOL COMPANY

New Clutches for V-Belt Drives

you need either a spring-tensioned idler to keep the belt taut, or better yet a swinging countershaft. As shown in a drawing, this must pivot on the output shaft to maintain correct spacing for the second drive belt or chain. The point at which ratio shifts occur can be varied by altering the spring tension.

A more costly type of transmission unit consists of two pulleys. One has a shoe-type centrifugal clutch plus a weight-controlled variable-diameter sheave. The other is a spring-loaded variable pulley that opens or closes to compensate for changes in the centrifugally governed one. These units afford a very considerable stepless ratio range—from 1:3, for example, to 1½:1. Driving from an 1,800-r.p.m. source, you could have an output of from 600 to 2,700 r.p.m.

Where a clutch is not needed, good manual ratio control can be had with a moderately priced pulley having interlocking flanges under spring tension. There is no centrifugal action; the pull of the belt determines the diameter on which it rides. This is altered by moving the motor, usually on a sliding or rocking mount.

Another type of variable pulley has internal cams. Driving torque makes these force the flanges together, maintaining belt grip even on overloads. Ratio is altered by moving the driving or driven unit.

Two such pulleys mounted on a countershaft between motor and load afford a still wider ratio choice. The countershaft being adjustable as to position, it shortens the distance for one belt (which will climb to a higher diameter) while lengthening that for the other (which will shift down). With such a setup, maximum speed may be five times the minimum.

Sharp turns can be made with twowheel drive on small vehicles equipped with a dual transmission unit. This provides clutch action, a modest 1.6:1 automatic ratio shift, and differential action. It consists of two centrifugal clutch-transmission units back to back. Mounted on the engine shaft, these drive separate countershafts through twin V belts fitted with spring-loaded idlers. A chain or belt runs from each countershaft to its wheel,

On turns, road friction slows down the inner wheel. The heavier belt pull shifts

DO-IT- YOURSELF

Needs No Wheelbarrow, Hoe, Mortar Box! Just Mix and Pour! Uses 1/4 HP Motor!

YOU ALONE CAN MIX 24 up. ft of SIDEWALK per HOUR YOU CAN MIX A 50 LD BATCH IN JUST 2-MINUTES FLAT!

mag ne- on your very first project you then enough to day far this ugged plate some. Coment Miler Take the work out of miling concrete cement morror proster stucco Makes + fast easy Lightweight ears to colly needs no tastering down wit remove pail and pour fing neered design assures perfect in a eve a time. Send for FREE HOW TO DO IT CEMENT MIX NO BOOKLET Order yours leday on 10 DAY TR AL OFFER Completely guston teed) Degler inqu es nu led-idegs for renightits





Build your own home and save the builders' profit - plus savings in lumber and labor with Sterling Ready-Cut-Homes. Anyone can assemble with simple, easy to follow plans furnished Every house complete with all lumber, roofing, nails, glass, hardware, paint, doors and windows marked ready to erect breight paid. Complete building plans ready for filing at low cost. Sold separately if desired. Write today!

PRICED PROM \$2150 UP **Pive Easy Payment Plans** Sond 254 for NEW COLOR CATALOG

INTERNATIONAL MILL AND TIMBER CO. DEPT. PS99. BAY CITY, MICHIGAN

AMAZING, PIRMANENT, NON-ILECTRIC NIGHTY PRACTICAL.

In start Storys, by experiments Lund sits of uses Bett sys the story inches a gar a sake from typesh or ant, water books from tanks a drains GUARANTEED Try any magnet one week Money back if you are not wet separed.

No 27th (Wt 53 of) Has pair of 235 be on steet block \$18.00 and 525 (Wt. 70 ca.) Has pair of 235 be on steet block \$18.00 and 525 (Wt. 70 ca.) Has pair of 235 be on steet block \$18.00 and 525 (Wt. 70 ca.) Has pair of 235 be on steet block \$18.00 and 525 (Wt. 10 ca.) Has pair of 23 be on steet block \$10.00 and 576 (Wt. 13 ca.) Has pair of 23 be on steet block \$10.00 and \$10.00 a

MI MAGNET COMPANY, 3240 N.W. 27th Ave., Miami 42, Fig.

Re-Power NOW with a V-8 or 4 Cyl engine-

Ford - Chev - Mercury - GMC - Pont - Stude - Dodge or Plymouth in Jepps, Jeepsters, Sta West - Trucks - Melser - E. M. J. cars - Convers on hits \$45.35 to \$58.90 Want last action? Gree of full information, send \$15.00 Dep and we will ship correct but Bat - GBC - Send full amount for prepaid shipment. Wire phone or write today. Details FREE.

HOOSIER MACHINE PRODUCTS CO.

214 2 E Str. Bt.

HE HOLL IN MINE

WRITE FOR

COMMUNICATION

SETATES INVEST

EASY PAY PLAN

Phone CR4 3442

Bendleton, Oceann



Clint And Rept let Just to relieve be a Proc les alexana Non Discovery of chenables the Bonne Owner Jan of or hac ory Main tenance to clean any Congres Sewer Brain.

het anyone can perate this new Plumbers Flushing Que warely releases and press re on a so. I shaft of water cleaning the most stuft BOTH STORMS OF THE STATE OF STREET STATE STATE ESTS closured with teresion have bound Rooms

and paper me away sharate victim are sell by he Hamburg she have victim are unit There is do need to remove as I or pipe of Greate Trap A special attachment allows mater to flow from the fascet torough the Vesti Cun where all is reseased on the pipe of stacks are no obstacas, as force tentin to marke wherever the water lays. But now what is the Pumblets Place as Unit with in Costay Plumbing Bills saved? Tear this Adout and we contribute and a linear beside a for FREE BOOKLET Obey this arge has seen a best a post card will do it because them K these 5 72 and the property of the same of of t MILLEN SEWER ROD CO , DEPT PS 9. 4540 M. Central Ave., Chicago 30. Illinois.

THIS PROFESSIONAL /ELDER

Now you can own a Trindl full 125 amp Industrial Welder at a price far less than smaller machines. With a Trindl 125A you can weld melals up to 16 inch thick. Operates off either 110 or 220 volt line, properly wired. 16 heat stages from 20 to 125 amps. Make and repair anything of metal around the home, garage, form or shop, like a professional. No previous experience of training needed. Full "do-it yourse.?" instructions with each machine. Complete only 398.50 Lo.b. factory, or write for details. Trindi manufactures a complete line of heavy duty welding machines. Dealer inquiries invited,

TRINDL PRODUCTS Ltd., Dept. T3-K 1807 Se. Clark St., Chicago 16, CL



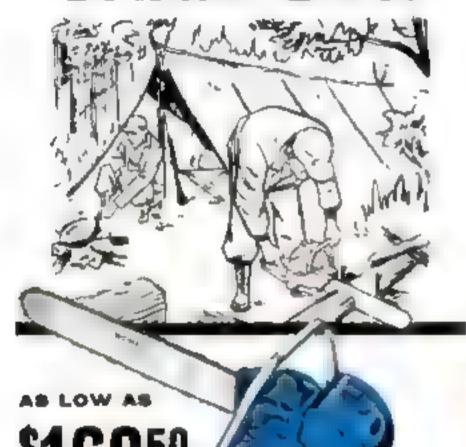




HOMELITE



CHAIN SAW



- perfect for firewood, building cabins or shelters
- easy to use
- · easy to carry
- fells trees up to 3 feet in dismeter
- cuts 18" trees in 18 seconds
- e only 18 pounds;

tless bar and chain

As little as \$3.60 weekly after small down payment

HOMELITE

74" RIVERDALE AVENUE, PORT CHESTER, NEW YORK

Dealerships available in some selected areas. Write for details.
In Canada: Terry Machinery Ca., Ltd.

New Clutches for V-Belt Drives

down the engine sheave to a smaller diameter, letting that wheel turn more slowly than its mate. Spring-tensioned idlers keep the primary belts taut.

Install them with care. Automatic drives are no cure for sloppy belt fits or misaligned pulleys. Remember that centrifugally controlled devices must go on the engine or motor shaft, never on a slower-moving one. Don't try to use them on engines with built-in speed reducers.

Belts must be the correct width for the sheaves (usually ½" wide, "A" section). With sliding-flange clutches, the belt should be long enough to slip on and off readily by hand. If floating flanges do not move freely, solvent or penetrating oil may be applied, but never oil friction-shoe clutches.

Most clutch troubles arise from overloading. Be sure to use a clutch rated for the power to be handled. An overloaded clutch will slip, generating heat, which will soon ruin the clutch element whether it is a V belt or lined shoes.

Finally, if you like to start a gas engine wide open, better change the habit. A centrifugal clutch is ingenious, but it's not smart enough to know whether it's taking off with or without you.

Giue bottles store developer



THE flexible quart bottles in which white plastic glue is packed can be used for storing stock solutions of photo developer temporarily. The pouring spout makes measuring easy. You will find the bottles discarded by many public libraries. To clean them, insert a small rag, two tablespoons of cleansing powder and a little water. Shake vigorously until all traces of glue are removed.

WAR SURPLUS ####### SA

OXYGEN BREATHING SUPPLY UNIT.

Designed for the Alt Force for bight abstracte
the part of the property of the part of the part

"SUPER 9" 200 AMP WELDING KIT
With Delura acressories consisting of one 200 AMP Gen. adjustable neither, stacted a holder. 30" welding cable resonant, guint toggle switch, voltmeter, voltage veg., 1 pr heavy-duty welder's gloves. All units guaranteed pre-tested. Approx. GOVT COST—\$500. Most items new—all perfect. \$26.06.





WELDING CABLE DOUBLE-O, heavy duty, nem-prine Jacket, Rhergias insulation. NEW Approx. GOVT COST 840, Wil. hand's 460 amps, or better 50° lengths \$14.50, 100° lengths \$25.00.

WELDING REACTOR (ar al) haled generature, 200 AMP. Reportly or better, NEW 87.96, 200-400 AMP. NEW 220-98.



SPLINE COUPLING for P1 and R2 Gen Keyway stot for direct bushing to engine or motor Double set serve for tight at estallation if any job. NEW, \$4 65 ppd, established Heavily constructed, will handle



SOUTH WIND HEATER & ACCESSORIES

Mrg for govt anteretic expeditions for jeeps and half tracks. Heating unit puls out over 20,000 B.T.t.'s Burtus any type gas 8 vott system. Fuel consumption extremely low 1 gal per 8 hrs Terrise to trucks tools, tractors. Isrms, werehouses ranches hout houses, call us etc. Comp. etc. with service & installation manuals and over 360 computerots Appear GOVT COST \$350. Maps; wt. 120 has gross.

"DELUXE 11" ARC WELDING KIT
Consists of 160-150 AMT. Gen vottage reg., ammeter, shunt,
adjustable beimet, electrode holider, pr welder's gloves, 30'
welding rable reactor cost gloot (aggle switch, rhegatal, Approx. COST \$630. All units guaranteed pre-tested. \$34.05 complete.



winches, house ideal for motor in golf or boy's victime car DC motor & clutch. Easily reversible wiring diagram furnished MI torque. If speed, Runs on 8-13 or 24 V Wt. 63 lbs. gross Approx GOVT COST 8300 1,the NEW, \$52.00. Matched uplosed pear for shows = 63.00 cs.

A225 1 Reduction Gest = \$33.80 140-1 REDUCTION GEAR For beaching hosts,



NEW 1960 CATALOG! Trampedous catalogs pur hispest ever-to by I ustrated 1000s of bargains in mar sur-sive & other items from 28c in min for your topy today! Where 1914 trained applies in the unity Other prices FOB Culter City Cal Send cash check money order 50% dep. COD.



AIRBORNE SALES CO., INC. DEPT. ESSEN 8501 Stellar Drive, Culver City, Calif.

WITH

MAGNETIC HEAD

solves the many iroblems of ham-

nering small nails and brads. Simply insert pail into magnetic nozzle, place nozzle against the exact spot you want the nail driven, push Rammer Ham mer sharply with palm and the job is done. Claw hammer head at other end makes this the handlest In I tool you ever owned. A real boon for picture framing, shelving , . . in fact all carpentry work, especially in corners and other tight spots. Made of endmium plated steel for durability.

Order No. 150. Only \$1.98 postpaid. DOWNS & CO., Dept 7609A, Evanston, Himois

CHAIR WOBBLY?



Tighten all loose objects with handy Plastic Wood Won't chip or crack. Ask for it by name.

For surest results always use GENUINE

Handles like putty—hardens into wood !

EPOXYS - the NEW SUPER REPAIR

Motorial that ANYONE CAN USE . ANYWHERE

NOW AVAILABLE IN THE HYSOL # 1C KIT (DESCRIBED IN JULY ISSUE POPULAR SCIENCE

PERMANENT BONDS * nover before thought passible to glass, caramic, a lum., forrows motel, wood, hard plustics.

SEE FOR YOURSELF - repair speake tile, furniture, sport equip., appliances; seel bothlub edges, boot seems, redioters; mount nathlams and flatures; model building.

contained in 2 tubes. Easy In use ... just agreeze one equal length band from each tube—mix and apply | P O. BOX 153 = OLEAN, N.Y

A smooth poste that is || Send only \$7 DE and a MYSOL KiT will be resked to you vie 2rd close mail propold

GENERAL INDUSTRIAL SALES



700 Watt Light Plant PUSH BUTTON

113 v 00 eye At flowered by a ranged at the east of the flowered by a ranged with the east of the flowered by a ranged with the east of th trunk Be prepared if sourm \$143.50

1200 Wast Plant (Rem 45) same as firm 24 but larger generator and engine with 50% greater output

We make all sizes up to 25,000 watts \$444 10c for catalog

MASTER MECHANIS MFQ. CO., Bopt. 8-89 Burlington, Wis.

🖴 ways to make B 🕒 N MONEY ... and have a paying business of your own

Welding is in big demand th oughout the country. You can step into the picture and cash in on the constantly growing need for emergency repair work and construction projects. Choose the equipment experts prefer-Hobart! You'll turn out topnotch.

professional work with the 190 and. ail-around AC transformer mod-1 2 . 0 amo, home work shop mode 🤝 🔞 🗔 amp. AC power DC welde a himsten that welds or runs tools, highly make the Write for complete details in obligation HOBART BROTHERS CO., BOX P 99. TROY OHIO, Phone FE 2-1223





Combo. With 2½ X scope, just \$114.95.

Only \$11.95 down on Marlin's Pay-Later Plan.

With 4X scope, just \$119.95—\$12.00 down.

Save \$10 on this meat-in-the-freezer

14	larlir	7
Micro	-Groove Rifi	es
Mariin Firearms Co	empany, P.O. Box 995, New Y	ork 17, N.Y.
Target & Game I	the Martin illustrated catali Record Book, plus a Home Se enclosed for handling an	and Field
NAME		
ADDRESS.		

Detroit's First V-6 Engine [Continued from page 9.]

pectancy usual in truck engine valves and valve seats due to lack of proper heat transfer, coolant is circulated through cylinder heads at the rate of 120 to 200 gallons per minute—enough to fill a 12-by-27-foot swimming pool in an hour.

Stroke for all four engines is 3.58 inches. The 305 has a bore of 4.25 inches; the 351, 4.56 inches; the 401, 4.88 inches. The V-12 bore is 4.56 inches, same as the 351 V-6.

Similarity of bore size between the 351 V-6 and 702 V-12 is a tipoff to the general interchangeability of the engines. No less than 70 parts are common to all V-6s and more than 50 are common to all V-6s and to the V-12, too. Just two different types of cylinder heads are needed for the entire line, for example—one for 305 engines and the other for the two bigger V-6s and the V-12. They just double up, use four heads instead of two, on the V-12. And its block actually is run down the same line as the V-6s; drilling machines make two passes instead of one to bore out the cylinders.

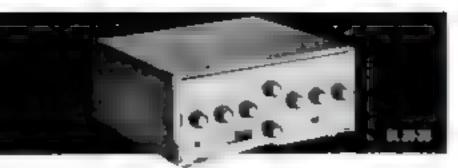
The engine is smooth. Judging from my experience, GMC has licked the imbalance problem chronically associated with V-6 engines. [PS, Aug. '55] I had asked Monaghan about this before driv-

ing the Suburban.

"That has caused us no difficulty," he said. "We engineered them to minimize imbalance as much as possible. Remember, too, these engines have been designed as truck power plants. There is a lot more structure and built-in rigidity in them to soak up vibration than would be possible in automobile engines."

I wouldn't have been able to tell there was a V-6 and not a V-8 under the hood if I hadn't known in advance. The engine churned without undue shake. There must be some secondary imbalance present, but it doesn't show. It was quiet enough so that maybe Monaghan wasn't kidding with his comment that they might "build a little more noise back into it just to let people know it's working!"

One thing that obviously helps here is that combustion chambers—formed partly in the head and partly cut into the piston top—are fully machined. This insures uniform compression ratios between cylinders and eliminates uneven power



Ekotape DUAL-CHANNEL PREAMPLIFIER

Combined control, preamp and amplifier center for stereo or monaural playback in one compact, easily installed unit. Single selector switch for tuner, reramic or magnetic phono cartridge, tape playback need. Styled in gold and black

PECIFICATIONS: Power Output 40 walts (20 m each channel) Impuls uner, ceramic or mag phono pick up, lape playback bead. Frequency Response: flat within 1 db. 20 to 20,000 cps. Tubes. 11. Outputs 3 (4. 8. and 16 phms). Size 13 at long 13 at deep. 5 2 high.

WEBSTER ELECTRIC, ELECTRONICS DIV. Racine Wis

Paint comes off clean



Just apply with a paint brush, it quickly softens up paint and other finishes, Stays put on uprights. At paint and hardware stores.

Sané 25c for Hustrateé Refinishing Manual or write for free Wonder-Paste folder Wilson-Imperial Co., 121 Chestnut St., Newark 5, M.J.



to operate A

SURR MFG. CO.

LOS AMOTLES 24, CALIFORNIA



More cutting power

for 1/4" electric drills

Irwin Speedbor "88"

most revolutionary bit in years

Firmin's Exclusive Hollow Ground Point and spade-type cutters bore faster, deeper, cleaner with less power. Try the Speedbor "88" in your small "4" electric drill or drill press and see Get smooth, effortless cutting action in hard or soft woods, plaster, plywood, plastics — even hardrock maple! Forged in one piece from solid bar of high carbon steel, hardened full length to stay sharp. And remem-

per ... the hollow ground point is exclusive with fruin's
Speedbor ''88''.
Buy individual
sizes or sels from
your independent
hardware dealer.

75¢

W to I

1.25

Objety

1 1/6" to 1 1/5"

No. 886-8 plottle roll set of 6, sizes V_0 " to 1", only \$4.50



Bore 35 standard holes with just one tool

New IRWIN Expansive Bit

lets you dial your size

Just turn the dial and you're set to go with this new Irwin Expansive bit. No hunting for the size you need. Fits all hand bit braces. Clean, fast, accurate boring action from \$5" to \$7-25 standard hole sizes in all!

And what a really fine precision tool to own. It's drop-forged from special bit steel, heat treated full length, machined for accuracy and sharpness, highly polished, too. Two cutters supplied with each bit. Model No. 21 with %" to 13," boring range also available. Ideal for home handyman, professional woodworker, or farm. See your independent hardware dealer soon.



IRWIN

Wilmington, Ohio

the original solid center ouger bit o screw drivers screw driver bits



draws in fresh air.
Aluminum fina and shank throw off heat, cool the smoke.

Famous honey-lining)

Air-vented chamber

\$293

Interchangeabio bowls — \$1.50 each

"Icepak" Set Airograte Yelio Bole Pipa plus two extra bowls, \$5.95

Other Yello-Bole Pipes, also of Imported brier \$1.50 to 34.95



Detroit's First V-6 Engine

impulses common in simple cast chambers, which often have varying ratios.

High-turbulence combustion-chamber design is also an important factor in the excellent low-speed torque of these engines. The design causes rapid burning of the fuel-air charge early in the power stroke, giving the piston a firm "push" through its full trip down the cylinder.

Low-speed torque of the huge V-12 is especially impressive. Its maximum gross torque of 630 lb.-ft. is developed from 1,600 to 1,900 r.p.m.—and it is not very far from that maximum over a considerably wider engine speed range. The great reserve power will permit use of five-speed transmissions in big tractor-trailer units in place of the usual eight- or 10-speed transmissions. The V-12's ample power will haul trucks up grades at good speeds with a minimum of downshifting, and without holding up long lines of motorists behind.



GOLDFISH-LOOP. When the fish in this bowl get tired of swimming in horizontal circles, they can change to vertical. The upright ring of the Britishmade wall acquarium is filled by complete submersion. Atmospheric pressure on the central open surface of the bowl proper then holds the water in place.

1960 Edition of Constantine's

Get the biggest Constantine Catalog & Manual-2000 items! World's jargest source for rare imported and domestic woods in veneers, lumber plywoods. bandings, in ays mouldings curvings hard to find hardware new solid bress bardware, wood finishing and mohossery supplies patterns tools woodworking materials-at bargain prices. Also exclusive Intaid Wood-Picture Kits Identification Chart of 60 rare woods in

color inspiring projects plans, etc. For all new 1860 Calaion & Manual send 256 (refunded on first order) Write today!

ALBERT CONSTANTINE & SON INC.

2050 Eastchester Rd., Dopt. M-6 New York 61, M. Y.



BRAND NAMES FOUNDATION, INC. 1



SO EASY to joint and file saws like new Two hardened steel rollers heep. terth same height. All treth out, saw runs frue and smooth \$2.95 gpd

青年化 — Year's sub-

cription to 'Chips &

news of exciting

voodworking Ideas and latest offer nas Proc with Catalog.

ptanka

hala

"TRU-EMCLE" SAW 387 Automatically balls frieth of 10 or more 12.95 pod

29.95 ppd Cars SUPER ORILL SUINDER Sharpens sound short their T hite new, wrong hand or provide \$2.95 ped.

CITCH OF SEWE

Steel initers give

all teeth encrock

height, ortch and hevel

granders.

A D McBURNEY, 5908 Hollywood Blvd, Hollywood 28, Calif. Dept. S-99

"THINGS TO MAKE ON TOOLS YOU OWN"

Handsome DELTA hard bound book illustrates and dearly describes a wide selection of useful projects designed to be built on each of the busic tools you own-only \$1.00 Send for FREE folder on complete Delta Library: Rockwell Manufac-Juring Company, Delta Power Tool Division, 5041 N. Lexington Avenue, Pittsburgh 8, Po.

one Postmonter HORBERT & CHRISTENDERRY Same of

FOR PASTER AND MORE SPRICIENT POSTAL SERVICE . . . LEARN THE ' A.B. C.'S" OF GOOD MAILING HABITS!

postal delivery zone number halps speed your mail!

> certain to include your return address on all letters and packagest

that the delivery address is correct and completel

C0000000 ---ANG---

........

ccoccccc c

MAIL EARLY IN THE DAY-IT'S THE SETTER WAT!

ON MAHOGANY PLYWOOD

Take advantage of our Southand Purchases, Ideal for paration Danc, Office, Hetal, ste, This select Luce Philippine Mehopmy marts the most right apopilipations, it is a rich golden cuter - rathery cur for howery of gratic Both cides sended and earnly to use. Boarded with the linest testing. Two types to choose from L. Plant series w 189 2. "Y" ground in render widths.

ASCOWAS TEA. 1/8" stack PLY4000 (Min. order & shorts)

SURFACE Price out SITE \$1.87 Plain 500 3' = 7 Plain 2.19

ON REQUEST 4 mm (2/14") Heek PLYWOOD [Minimum under 4 Shants) SUMPACE Priga sech SIZE

4" 10" Pinin \$4.39 4" = 8" "Y" greated 4.59

random

GROOYED

FREE SAMPLE

Dalle FIREECLASS PANEL ING - Student quality, Flat or corregated 200 In greatest variety of colors, 90g eq. ft. value NOW Only



SPECIAL PALLEY TANK DIVING UNIT

Allows approx. I hour diving time, bink tun 22 ru, ft, tastad tunks, shut-off volvas, air bases, difuter-demand type regulator plus humans, sulety helt and weight belt. Equal to on \$10.00 diving unit: SAVE

BUILD-IT-VOURSELF. SAVE PALLEY ONE-TANK SKIN DIVING BIT Haz 38 cm. h. tootad and dated Air Tonk ... allows decree, 45 minutes of drying term. Complete with abstract vetre, well credit and horness, six hence, deluter-demonstrative conferences assembly much piece 3992 e-ght limit - all you need for underweter fun. Cet. 6th, PSD-11

CORNELIUS AIR COMPRESSOR

A Housestrage AIRFORCE SURPLUS Air Constantes Heal for I thing underwater diving tents (such as shown above) . Has a hart-in (7) MP 27 V-DC electric meter. Will deve op 1500 PS). or report to 2000 PSt Will deliver -4CFM. Used fest excellent.

25V AC CURRENT FOR PROVIDE NOW 3252



the corpus heckes with scalar in a uhite nimeta facu. Faca sculas are A, B.C1, C, B and K. Other able 295 hear S L & T acoles, for Come.

S lack IMPORTED SLIDE RULE Same scales as above tule . . . 359

MAPORTED SLIDE RULES

HE WEST LOG-LOG DECIMAL TRIB IMPORTED SLIDE RULE

Professional Log-Log, Decimal Trig 51 de Rule. Non-warping top quality bankos - 2-calar scoles an white attento facing. Scales We Libble OF, CF, OF, C1, C, D, LL3 & LL2 & gen aids. Other side LLO, LLOO, A. B,K,CS,C,D,5,ST&T+WHH curse and 16 pg. book. . 1095



CRASH HELMET

STOR EXTRA

with Emphasion

last purchased has

CATALOG

Packed with toport

bergnins for Home or

Patin Includes New Redrecht Equipmen

Supplierance,

PROFESSIONAL DRAFTSTTE

Scientificativ designed, Ideal for use at Classroom, Art Studie, Werkship, Office, Home, atr. Entity Inc. to a bringing, Has I' and S' ocale estillated in 10005 of un inch. Mode of black modionic cluminum, Weigh's 29 He Comes C with \$17 a 37" drawing boards a



A - Swedish Army FOLDING BAYONET . . \$7.70 - Peretroper FOLDING MACHETE . Felding Machese HOLSTER for almen. -22" Vanadiou Steel MACHETE with case | 1 98

- British Army cont. PICK-HOE TOOL . . - Officer's Leasure POCKET COMPASS. . 3.49 - Now Many FIGHTING KINDE with about 2 94

NEW BRITISH PACK RACK 588 RUS ONLY 695 MATERIAL

Has light-might whaler shad frame. Was designed for British Army. Frame has a convex sormed, folding suck shalf at bottom, Pack a made so weight in carried or high. Folds flat to store. \$25,00 vistors.

U.S. ARMY JEEP GASQLINE CANS

Top quality Army Surplus, 5 gal. salf-sad co. 3 for \$5.00 PEA. GAS CANS as above NEW \$4 95+=

Jose WATER CANS - Howly manufortwood, Percolain lines, 595 Manue Jean sted, NOW. 5 EA. Mover been used. NOW.

Sand check or M.O. 1/2 deposit with C.O D. All from shipped passage or freight call set.



Send 75¢ to cover the east of

handling and mailing

savings. Has rugged owner shall

podded made with fear rubber. Sizes Swot Med., Lp. Med-Inc

Auto, Boot or Cycle racing, \$15 ent.

2263 E. Vernon Ave., Dest. PS-PI Los Arageles 58 California

GET IMPROVED CAR PERFORMANCE . . .

IMPROVED GASOLINE ECONOMY

. with an AC ACon-O-Mizer!

The AC ACon-O-Mizer controls fuel flow for maximum acceleration and high speed operation—saves feel, reduces flooding and stalling l

Installed between fue pump and carburator and actualed by vacuum from the manifold, the AC ACon-O-Mizer regulates fuel pressure under al

driving conditions, sanses increased power requirements and provides maximum pressure when you need it Constant, accurate regulation of fuel flow gives you greater fuel economy!

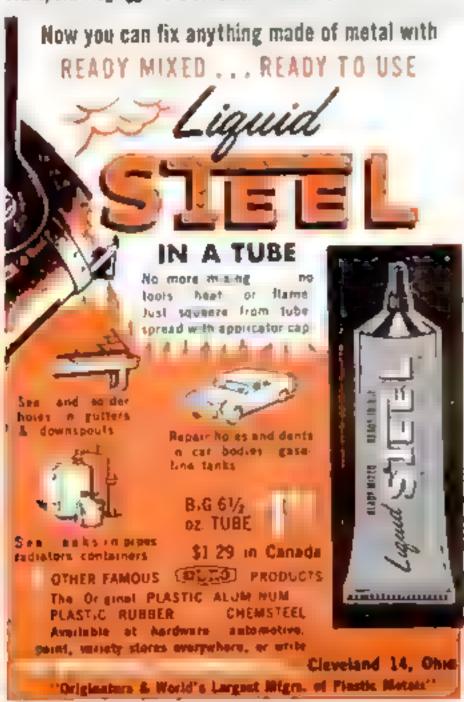
ACon-O Mizer Only

\$090 At Your Nearby Service Slation, garage or General Motors Dealer



ACon-O-Mizer

AC Spork Flug 🛱 the Electronics Division of General Mators



Stopping the Wave of Bank Holdups [Continued from page 10]

sults. Exact words, names used if there were more than one robber, mannerisms, unusual features, the written note - these are now believed much more important than estimates of weight or height.

There are certain gimmicks that some

tellers can use, too:

 Dummy money. This consists of real bills at top and bottom of a phony wad, in a special place in the cash drawer. Some officials think this can be risky if

the robbers are pros.

 "Dead" money. Most stickup men don't want large-denomination notes, so they often specify "fives, tens, and twenties." What they don't always know is that more and more banks record series and serial numbers on packs of small bills. Such records are fine evidence if the bills are found on a robber

 Private codes. A key word or gesture can tip off an adjacent teller that a holdup is in progress. Many banks encourage employees to work out codes.

Catching early birds. To frustrate the early-morning holdup—a favorite tactic against suburban banks-the experts advise a fixed, unvarying procedure at opening time. An arrangement may be made, for example, for a shopkeeper in the neighborhood to call the bank every morning just before opening. The bank official who answers the call repeats a standard formula, such as: "This is the So and So Bank, good morning." If he changes so much as a word in the routine, it's a signal to bring the cops quick.

Employees are often instructed never to admit a stranger to the bank just before opening time. The rule is supposed to apply even if the stranger is accompanied by an employee-who could be a captive. Similar rules prohibit the admission of strangers uniformed as mailmen, delivery agents, or repairmen.

The bank-robbery wave hasn't been all one-sided. One teller defeated a robber by quick wit. When the jittery crook demanded money, he replied, "But I'm a note teller. You'll have to go to a paying teller." The man bolted.

And then there was the woman teller who was threatened by a man who said he had a gun. "Show me the gun," she said. "No gun—no money!" Taken aback by this feminine logic, he fled.



Now you can use this ONE power-feed shop to turn rough lumper into moidings, trim flooring, furniture ... ALL popular patterns. R.P. ... PLANE ... MOLD ... separately or all at once with a one MP. motor Use 3 to 5 HP for high speed output. Fully Safe guarded. Low Cost...You can own this power tool for only \$30 00 down payment.

Write TODAY for free Catalog
BELSAW POWER TOOLS, 920 Field Bidg , Kansas City 11, Mo.

fandingt drill bit made Use on any lectric drill lathe, drill press, etc. dude of finest American hispeed teel 2's long "dameter flas " side-cutting section. Cuts steel vood plastic alimitum ste 3 types
-specify types wanted. (1) Ali puriose, 2) Wood (3) Heavy metal.
2 45 each - J for \$7.50 Postpoid
Wichey back guaranteed Buy from bur dealer of send check or Money order and name of Isyonite tool leaser TODAY (Makes ideal gift)



Jobber & Dealer Inquiries Invited

sende all metal-

Craft work

EAVER BRILL & YOOL CO., 2008-A Medica Trafficway, Kansas City, Mo-

WELD

SOLDER

tec.nimed by thousands of londowners. Mechanics and sobby, at no the wolfer of the property of the property wirely is an action to the line. The ideal soft at a fife-leaf upon the line. The ideal soft at the line of the leaf and a fife-leaf upon the line.

FOUR-WAY WELDER CO., Dept. F3-J

orthy up libray mother back guarantee. 1810 S. Federal St. • Chicago 16, III. RETAIL PRICE \$125.00

FACTORY TO YOU S

SUPERSHOP includes precisionbuilt 6" tilting toble saw, verti-

cal and herisantal drill press, 30" lathe, sander, grinder. 100% BALL BEARING. Write for FREE catalog, full details, trial plan.

UNITED INDUSTRIES, INC.

Pewer Tools Division







On tour or around town, drive with Quaker State. This pure Pennsylvania oil is tested 24 hours a day in all types of engines. Skilled technicians check the oil's strength and endurance, its detergent action and temperature range. In the labs-and out on the test track—Quaker State proves that it protects all moving parts and stops acid action. Get this protection for your car with Quaker State! QUAKER STATE OIL REFINING CORPORATION, OIL CITY, PA.

Member Penn. Grade Crude Oil Aun.

100th Anniversary of Drake Oil Well and founding of the Petroleum Industry





PEACE COSTS MONEY

Money for strength to keep the peace. Money for science and education to help make peace lasting. And money saved by individuals.

Your Savings Bonds, as a direct investment in your country, make you a Partner in strengthening America's Peace Power The Bonds you buy will earn money for you. But the most important thing they earn is peace. They help us keep the things worth keeping.

Think it over. Are you buying as many Bonds as you might?

HELP STRENGTHEN AMERICA'S PEACE POWER BUY U.S. SAVINGS BONDS

The U.S. Government does not pay for this advertising. The Treasury Department thanks, for their patriotic donation, The Advertising Council and this magnitude.





More alumnum lighter weight setter performance beautiful 5 d World's Lowest Priced for time it our 736 a week Rider Agents Winted 16 no dealer near you send 250 for 30 page pacture book, full details, wealer price. or send \$1 (refunded Brit order) for this and Service Stantial plus Repair Manual and 13 327 photos of car and factory.

MIDGET MOTORS CORPORATION, Athens 2, Ohio



A MULTION BOLLAR INTENTORY AT TOUR FINGER PS NO LYTICK TO CARRY DRIVER AS YOU MEED T WHOLEBALE

PRICES. Estim #2 on prod on refriedd it you are not lude, and alled

TROUSANDSI I of Hoterally Adapt. tised dome of Hand Tools, Paner Tools, Markinski Tools, Faol Chests, Paint Sprayers, Sight Protuces, Appliances, Gurt, Gifts, tays and other stems too

WE SHIP COAST TO COAST Wantesale Discounts up to \$5 . OFP SILYO HARDWARE CO., DATE: 107 Welcot St., Phile. A, Pa.



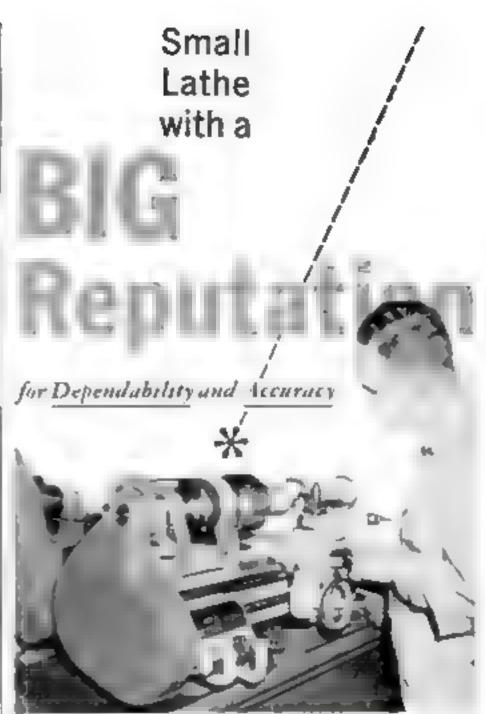
CUT ANY SIZE - ANY SHAPE

Handy pocket size - cuts leather asbestos, rubber, cork, etc. round 1/4" to 6" - any tize Send Check or straight and odd shapes

Money Order!

ZIMMERMAN PACKING - CINCINNATI 12, OHIO





Always ready to go . . .

Run every day, for years—still going strong . . .

No doubts. No worries—if the job goes on the South Bend, delivery's on time . . .

THAT'S DEPENDABILITY

The FINISH so PINE, just wash and deliver—grinding or lapping seldom necessary . . .

When tolerances are tight, "South Bend" does the job . . .

THAT'S ACCURACY

Dependable and Accurate—that's how South Bend lathes are built . . . So say thousands of South Bend 9" lathe owners . . . Compared with all others-They're your best lathe investment.

OVER 140 MODELS-FROM \$280.00 Write for free catalog

LATHE, Inc. SOUTH BEND 22, INDIANA

Builders of Lathes, Milling Machines, Shapers, Drill Presses, Pedestal Grinders



Workbench Contest Dealer Listing Cont. from Page 180

Kew Forest Lumber & Supply Co., Inc. 68-90 Austra Street Forest Hills, New York

Alison Vervalen Co. DW & Westside Avenue Haverstraw New York

Steinbrook Lumber Corp. 400 Sunrise Righway Lynbrook L I New York

L. Dain's Sons Co., Inc 100 North Water Street Peckskill, New York

Wiltern F Anderson, Inc. 20 Elm Street Potsdam, New York

Herb Tart Lumber Company 1012 Chill Avenue Rochester 11, New York

Harbor Lumber Company 269 Glen Cove Avenus See Cill L. I., New York

Kellogy Lumber, Inc. Mendow Street Utica I New York

NORTH CAROLINA

Comen Lumber Co B12 Remnour Street Durham North Carolina

Cape Fear Supply Company 315 West Russell Street Fayetteville North Carolina

Reed Supply Co 1100 National Highway Thomasyllie, M. C.

NORTH DAKOTA

Simonson Cash Supply 2100 Main Avenue Fargo, North Dakota

The Robertson Lumber Co. 200 First Avenue S. E. Minot North Dakota

Wilson Lumber Company 220 West North Street Akron 3 Ohio

Forest City Material Co. 160, Broadway Bedford, Ohio

Western Cabinet & Millwork Co. 6301 Coloren Road Cincinnati 39. Ohio

Porest City Material Co. 17933 St. Citer Avenue Cleveland, Obio

Forest City Material Co. 14601 Loram Avenue Cleveland Oh o

Forest City Material Co. 10800 Brookpark Rd Clove and Ohto

Rock Island Lumber Co. 14550 Lordin Avenue Cleveland, Obio

West End Lumber Co 7317 Loran Avenue Cioveland, Ohio

The Home Materials Company 154 Octobe Street Monafield Oluo

Mantua Lumber Company Inc. 189 Mill Street Montua, Ohio

Mohler Lumber Co. 1926 Portage Street North Canton 20, Ohlo West Lake Fork Lumber & Supply Co. Rear 20249 West Lake Road Rocky River 16. Ohio

West Lake Fork Lumber & Supply Co. Foot 660 South Falmouth Dr. Rocky River Obio

G J Apel Lumber Co., Inc. 1215 McKinley Street Sandusky Ohio

Alexander Lumber 329 North Seventh Street Steubenville. Ohio

OKLAHOMA

Henshaw Lumber Co. 1621 North Peoria Tulsa, Oklahoma The Davidson & Case Lumber Co. P O Box 110 Weatherford, Oklahoma

OREGON

Builders Supply 2701 Court Avenue Baker Oregon

Acme Hardware Company 245 South Contral Medford 1, Ovegon

Bolse Payette Building Contor Box 178 Ontario, Oregon

PENNEYLVANIA

Lehigh Lumber Company 1030 North Sherman Street Allentown. Pa

W S McDowell Co. 1917 W 2nd Street Chester, Pa.

Greenville Lumber & Supply Co. Box 190 Greenville, Pa.

Cettysburg Building Supply Co 223 South Franklin Street Cettysburg, Pa

De Haven a Wood Products 55 Keder Avenue Lancaster, Pa

Broscious Lumber Co. P. O. Box 231 Northumberland, Pa

Hilco Lumber Co 70th St. of Essington Ave. Philadelphia, Pa

Prior Lumber Company 6263 Oxford Avenue Philadelphia 11, Ps.

Vitte Supply Co OFI Cast's Shannon Blvd. Pitisburgh. Pa.

Schmoyer's Lumber Co. Schwenisville. Pa. Johnson-Bizer Ca.

369 South Dock Ave. Lundy Lumber Company Inc. 1896 West 4th Street Williamsport, Pa.

RHODE ISLAND

Herris Lumber Company Inc. 546 Atwell Avenue Providence, R. I.

L Sweet Lumber Co Inc. 709 Harms Avenue Providence 9, R. I.

SOUTH CAROLINA

Plorence Builders Supply Plorence, S. C.

H M Newsome Builders Supply Sumter Avenue Hartsville South Carolina

Resort Lumber & Millwork Conway Highway Myrtic Beach, South Carolina

SOUTH DAKOTA

Mobridge Lumber Co Mobridge, S. D

Schoeneman Brothers Co. 305 East 8th Street Stoux Falls, S. D.

Sherwood Crane Lumber Co. Box B 57 Almodo Texas

Stripling Lumber Co. 1090 South 4th Beaumout, Texas

Foxworth-Gribraith Lumber Co. Box 11.5 Dumas, Toxes

Southwest Lumber Co. 9th & Ochon Streets El Paso. Toxas

West End Lumber & Supply Co. 41st & N Galveston Texas

Inving Lumber Company's Handy House P. O. Box 1344 Irving Texas

Drago Hardware Co 630 Houston Avenue Port Arthur Texas

Drago Hardware Co 1300 Noth Avenue Fort Arthur Texas

UTAR

Etarapes & Co. 58th Street Joseph 5. Utah

VIRGINIA

R S Monger & Sons, Inc. C & W Drive Harrisonburg Va

Ace Lumber & Building Supply Corp. 6151 Virginia Beach Blvd. Norfolk 2 Virginia

WASHINGTON

Sand Point Builders Supply 6200 Sand Point Way Seattle 15. Washington

WEST VIROINIA

Ballov Lumber Company 1,18 Bluefield Avenue Bluefield, W. Va.

WISCONSIN

Fragor Lumber Co , Inc 501 North Superlor Street Appleton, Wisconsin

Ashland Builders Supply Co. 411-17 El a Avenuo Ashland Wisconsin

Capitol Lumber Company 400 West Capitol Drive

Stemman Lumber Co. 3500 North Holton Street

ADDITIONAL DEALERS JOINING STH ANNUAL HOME IMPROVEMENT PROGRAM:

Anawalt Lumber Co. 1575 Centinels Avenue Inglewood, Calif Minton & Lumber & Supply 455 Evelyn Avenue Mountain View Calif

Tri State Building Center Hox 127 Craig. Colorado The United Lumber & Mercantile Co. 8th and Pitk's Glenwood Springs. Colo.

Botse Payetta Building Center Box 401 Greeley Colo The W C. Glenney Co. 336 North Main St. Manchester Conn. Golliher & Klimkiewicz Inc. 1334 11th Street, S.R. Washington, D.C. Ocala Lumber Company 1214 North Magnolia Ocala Florida

Venice Millwork & Supply, Inc. P O Box 1534 Venice Florida Randa'l Brothers 665 Marietta Street

Atlanta, Ga Carolina Lumber & Supply Co. 2135 Plaster Bridge Rd. A'lanta, Ga Widiams Brothers Lumber Co. 934 Glenwood Avenue Atlanta Ca



Workbench Contest Dealer Listing Cont. from Page 274

Pratt Dudley Building Supply Inc.
Atlanta Highway
Covington, Ga
Cherokee Building Supply Co.
327 North Hamilton
Daiton, Ge
Flowers Lumber Co.
1392 Central Avenue
P O Box 352
East Point Ge.
Daniel Lumber Company inc
318 Main Street
Lagrange Ge
Lugrange Ge
Lugrange Ge
Lugrange Ge
Lugrange Ge
Rome Builders Supply
807 Hamilton Road
Lagrange Ge
Rome Builders Supply
Rome, Ge
Savannah Lumber & Supply Co
2818 Buil Street
Savannah Ce
Stone Mountais Builders Supply
8048 Memorial Drive
Stone Mountais. Ge

Boise Payette Building Center Box 1054 Aberdeen, Idaho Boiss Payette Building Cepter Box 430 Blackfoot Idaho Boise Building Supply 6900 Fairview Avanue Bolse, Idaho Boise Payette Building Center 220 South 3rd Boise Idaho Irricators Lumber Co. Inc. Albeny at Seventh Ave P. O. Box 99 Cardwel Rights Boise Payetta Building Center Box 518 Emmett Idaho Boise Payette Building Center Box 66 Haze ton, Idaho Balse Payette Building Center Box 365 Idaho Calle, Idaho Bestway Building Center Box 426 Lewiston, Idaho Bolso Poyette Building Center Box 517 Montpelier Idaho Balso Payette Building Center Hex 460 Nampa, Idaho Boise Payette But ding Center Box 188 Itesburg lanho Micke sen a 142 W. st lat North Rexbuck ldabe Bouse Payette Building Center Box 36 St Anthony, Idaho B se Payette Building Center Box 1077 Twin Falls Idaho

West Side Coei & Lumber Co.
1... I West Market Street
Bloomington. Il Inois
Thompson Lumber Co.
612 South Neil Street
Champeign, Il roois
Joseph Lumber Co.
2001 No. Narragansett
Chicago 39 Il roos
Vermiton Lumber Co.
615 North Jackson Street
Danvice Himois

Baynes Milling Co. Lumber Department Portland Indiana

Horton Lumber Co Inc. Borton Kansas By S.x Lumber Yard 6601 East Rel'ogs Wichits, Kansas

The Jenkins Essex Co. 142 East Dixie Avenue Edzabethtown Rv

The Wm D Bowers Lumber Co. 231 East Patrick St Frederick Md

Allegan Lumber Co. Allegan, Michigan Wood Lumber Co. Bangor Michigan

Beverly Lumber Co. 1101 Pipestone Benton Harbor Mich Decatur Wood Products Decatur Michigan Hutch as Lumber & Supply Co. Douglas Michigan Stegath Lumber Co Box 302 Escanaba, Mich Johnson-Howard Lumber Co. 510 North Edwards Kelamason, Michigan Millers Lumber Co. 1919 Factory St Kalamazoo, Michigan Sportel Lumber Co 424 East Michigan Ka amazoo Mich gan The Ranier Company Inc. 1600 Southfield Lancola Perk Michigen
Mt Clomons Lumber Co
P O Box 572
1010 S Gratiot
Mt Clemens Mich Schrader Lumber & Coal Co. 125 North Whittaker St. New Buffalo Michigan Healey & Healey Otacgo Michigan Portage Lumber Co. Portage Mich gan Plainwell Lumber Co Pullman Supply Co. Pullman Michigan Kier's Custom Woodwork 28220 Harper Avenue St. Clair Shores, Mich Kauffman Lumber & Coal Co Schooleraft, Michigan Michigan Shore Lumber & Supply Co. South Haven & Coloma South Raven Michigan Walter Winkel Lumber Co. Dunk by Avenue South Haven Michigan Andringa Lumber & Feed Co. Wayland, Mich gan

Oxboro Lumber Company 0421 Lyndale Ave. South Bloomington, Minn S. Hage Lumber Co Madelia, Minn Acme Sione & Lumber Co 3200 Prance Avenue South Mingeapolis Minn N C Bennett Lumber Co 2825 Fifth Avenue, South Minneapolis, Minn Bloom Dale Lumber In: 18108 France Avenue, South Minneapolis, Minn. Crystal Lumber Co 5353 Lakeland Avenue Minnespoi e Minn Biawatha Lumber Co. 1213 East Forticth St Moneapola Mon Southtown Building Materials 8436 Pillsbury Avenue Minneapolla Minn Westlund Westerberg Lumber Co. 3105 Hiawethn Avenue Monneago a Monn Hess Lumber Company Pine Island, Minn Howard Lumber Co. 4719 42nd Avenue. No Robbinsdale, Minn

Johnson Cashway Lumber Co 1820 R Street Lincoln, Nebraska

L. E. Ritter Lumber Co
Beividere New Jersey
Wm C Van Handel & Son. Inc
Prospect Street & Circle Ave
Clifton, M. J
General Lumber Co. of N J
204 Clinton Street
Roboken N J
Charles R Field & Son
Ward Street
Bightstown, New Jersey
Conover Lumber Co
110 First Street
Keyport M. J.
The Bachman-Veghte Company
162 West First Avenue
Roselle, N J

Scott Lumber Co 1301 East 10th St. Ameriko. Texas Poxworth-Gs. braith Lumber Co. Box 1115-301 E. 7th Street Dumas Tex Alenefee Lumber Co 5506 Beliare Blvd Houston. Tex Charles L. Lengu Lumber Co. P. O. Box 98 Muleshoc Tex Alamo Heights Lumber Co. 5939-41 Broadway San Antonio. Tex

Tri-State Building Center 116 North Main Bountiful, Utah Tri-State Building Center Box 128 Murray, Utah Tri-State Building Center 1164 Kast 21st Street Salt Lake City Utah Tri State Building Center Box 266 Tremonton, Utah

Pennaula Supply Co. 3404 Virginia Avenue Newport News, Virginia

Bestway Building Center Box 174 Kennewick Washington McEvoy Rogers Lumber Co., Inc. 319 Kiralan I Ave Kiraland Wush Bestway Building Center Box 37 Moses Lake Wash. Bestway Building Center Box 266 Naches Wash Bestway Bullding Center Box 529 Pasco, Wash Bestway Bullding Center Quincy, Wash Bestway Building Cepter Box 2148 Spokane. Wash North Side Building Supply E 707 Francis Ave Spokane. Wash Bestway Building Center South of h Street Sunnyside, Wash Brookdale Lumber Co. 13602 Pacific Avenue Tecores, Wash Bestway Building Contor Box 266 Yakima Wash

Butler Lumber Co
4 139 N 124th St
Butler Wiscopain
Riffert Lumber & Fuc!
6826 South 13th Street
South Mi waskee Wis
Wilbur Lumber Co.
7919 W Kational Ave
West Allia Wis.
Peterson Building Supply Co.
4777 8th Street. South
Wiscomin Rapids. Wis.

Boise Payette Building Center
Box 436
Casper, Wyoming
Casper Lumber Inc
404 R Rantond Ave
Casper Wyoming
Boise Payette Building Center
Box 377
Cheyenne Wyoming
Tri-State Building Center
Box 16
Rawlins, Wyoming
Tri-State Building Center
Box 958
Rock Springs Wyoming

CANADA

Garner Bunders' Supplies. Ltd. P.O. Box 1239
Duncan, B.C. Canada
Ramicops Lumber Co., Ltd.
742 Lorne Street
Kamloops B. C., Canada
Val Royal
12200 Reed Blvd.
Cartlerville 9, Montreal, Que.

get a real head start in work you like!

choose qualify know before

enlistment

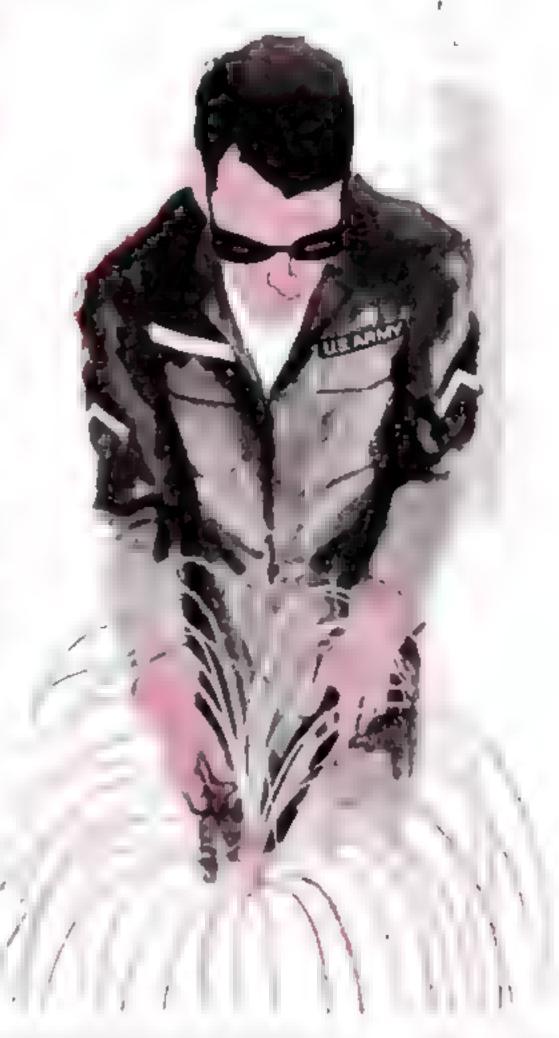
It's up to you! The Army's new "Choose-it-Yourself" System lets you choose your vocational training before you enlist! Here's how it works:

1. CHOOSE... before entistment!
Choose your training from fields like
Metal Working, Electronics, Motor
Maintenance, Guided Missiles, Radar
& TV Repair—and many more.

2. QUALIFY . . . before enlistment!
Next you take aptitude and physical examinations to qualify for the training you've chosen.

3, KNOW . . . before enlistment?

If you qualify, you know you'll get
the training you like. Your choice is
written into your future Army
record—guaranteed before you enlist.



AND THERE'S NO OBLIGATION! Choose, qualify and know—without the slightest obligation to enlist. You get the Army training you like—guaranteed in writing—or you don't enlist! This week, see your Army recruiter and choose from his complete list of available fields.



Do "Extinct" Animals Still Survive?

[Continued from page 66]

"coating of dried serum (blood) was still preserved on the cut edges." But this was 60 years ago, and, to date, no one has

brought home a neomylodon.

Nor has anyone brought back alive one of the super-anacondas of Brazil—said to run to 150 feet in length. But Father Protesius Frickel, a Franciscan priest at Oriscima, Brazil, studied one and reported that its eyes were "as large as plates." And another, an estimated 115-footer, was photographed as recently as 1948, after machine gunners had spent 500 bullets killing it. Its picture taken, the giant snake was casually rolled back into the river whence it had come. No one knew of its rarity.

Does the hairy mammath still exist? The natural deep-freeze of Siberia has enabled scientists to study the mammath more closely, perhaps, than any other fossil creature. Several have been found, perfectly preserved as they were in life many thousands of years ago, in giant

ice cubes.

No one really knows what caused the mammoth to disappear. As the Ice Age melted into time and the glaciers retreated, the mammoths—adapted by their long, hairy coats only to cold—were backed up into the Siberian tundras. And then they were seen no more.

But Heuvelmans thinks they may just still be around—but in the forests instead of on the plains. He puts a finger on the map where the climate could still support them: It is the unexplored icy heart of the targa—the Northern Siberian

forests, largest in the world.

An analysis of the stomach contents of mammoths, he points out, shows that in winter they browsed on the leaves and branches of conifers, arctic willow and other dwarf northern trees—exactly the flora that one finds in the taigs.

Do we know for sure, Heuvelmans asks, that they are not still alive in the taiga? Are we sure that those frozen carcasses were in cold storage as long as

some scientists say?

Bird in the bush? Heuvelmans has similar doubts about the demise of the moa, the huge bird that stood—or standa—twice as tall as a man. While no one has reported seeing any moas around for quite a while, several facts support the

possibility that they still linger on. There are the native traditions, which give a very detailed picture of the bird. Could they describe a moa unless their not-too-remote ancestors had seen one? Also, on South Island, New Zealand, have been found comparatively fresh remains: mummified remnants of the body and akin, and brownish feathers. Shells have been found, too, of eggs over 10 inches long.

Is the mon only hiding? There is the case of the Bermuda petrel, which science had considered extinct—until, in 1951, Dr. Robert Cushman Murphy of the American Museum of Natural History caught, banded and released five live ones. It may well be like that with the moa, says the hopeful Dr. Heuvelmans.

New Zealand may also conceal a small animal that would, if it exists, effect a revolution in scientific theory. It is the waitoreke—called "impossible" by pale-ontologists, "existing" by the native

Maoris.

If anyone finds one of the creatures, especially a female, Dr. Heuvelmans would like him to examine it closely and let him know whether it has teats. If it has, many textbooks will have to be junked. For teats would make the waitoreke a mammal—the only one in New Zealand—and all our geographical theories about how and when New Zealand and Australia were connected will have to be revised. "The date of submergence of certain continental bridges would have to be changed by several tens of millions of years," Dr. Heuvelmans says—if the Impossible Waitoreke has teats.

How much skepticism should one bring to native legends? Capt. William Hichens, an Englishman who had expressed disbelief in the existence of a great Afri-

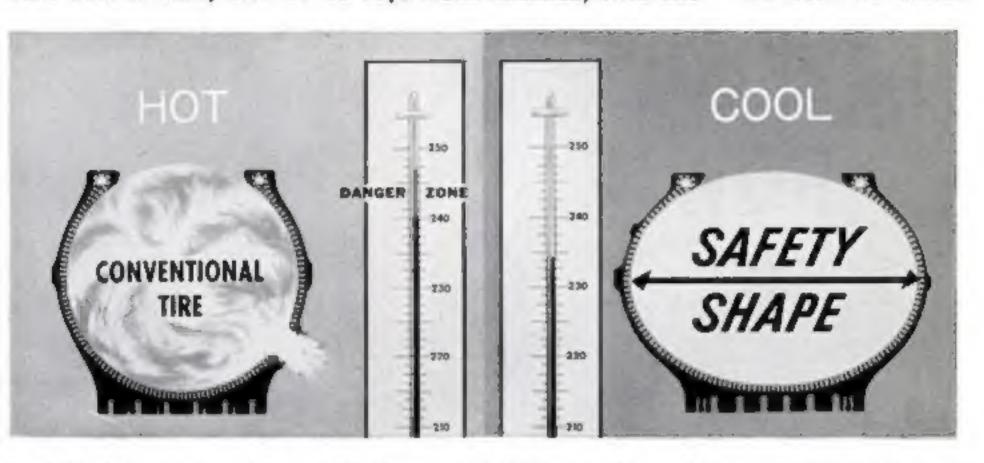
can snake, the "lau," writes:

"Mshengu lived on the southeast side of the Wembare swamps and, as a young man, had traveled and hunted around and over Victoria Nyanza and the Nile swamps. To my suggestion that there was no lau, he said, 'I might have said, as a young man, that there is no such thing as a motor car. I had never seen or heard of one then. But there is your motor car in the sight of my eyes and I have sat on its chairs and heard its bowels digest inside it. It is thus of the lau.'"

GYBT-US9-D8JH

RADICALLY NEW U. S. ROYAL LOW PROFILE TIRES

BEAT DEADLY HEAT, GIVE UP TO 35% MORE MILEAGE, SAVE GAS - YET COST NO MORE!



HEAT HATES TIRES...WEARS 'EM OUT...BURNS 'EM OUT...BLOWS 'EM OUT! BUT NEW SAFETY-SHAPE TIRES DON'T FLEX AS MUCH, DON'T WORK AS HARD, RUN COOLER, LAST LONGER!

CONVENTIONAL TIRE

In world's largest tire "torture chamber", U.S. Royal tests tires 24 hours a day, 279 million miles a year. Above, a conventional tire fails on a high-speed test wheel after only 72 minutes. Murdered by heal!



New U.S. Royal Low Profile Safety-Shape tire passes "torture test" in a breeze, Keeps running hour after hour at high speeds. Lower, wider construction means less flexing, less heat, triple the high-speed endurance!





As your tires revolve, they constantly flex. This creates heat that can murder your tires. (It's like bending a paper clip to and fro...the metal gets hot and finally snaps!) U.S. Royal beats the heat with a new type of tire—the Low Profile Safety-Shape tire. This lower, wider tire doesn't flex as much as conventional tires. Runs cooler. Stays below the crucial heat danger zone. Gives up to 35% more miles. This easier-rolling tire even cuts your gas bills! Yet it costs no more than conventional tires. Ask your U.S. Royal Dealer.

5 WAYS BETTER THAN CONVENTIONAL TIRES! MILEAGE — 25% to 35% more mileage

HIGH-SPEED ENDURANCE — 3 times better

TURNPIRE GAS ECONOMY — 6-12 extra miles per tankful

TURNING EFFORT — 20% more stability on curves

SKID RESISTANCE AND TRACTION — Raised 5% to 10%

u.s.royal tires



Carrol tel Island

"I SAW MYSELF 10 YEARS FROM NOW!"



It happened one payday ...

Fred worked on the line next to me. Nice guy. Married. Two children. Been on the same job 10 years.

As we walked away from the pay window together he said, "Funny. Each week I get to feel like I'm letting my family down. You know. Not getting ahead so I can give them the things they need."

His words hit me all of a sudden. I could see myself saying the same thing-10 years from now!

Not only that, I could see the same job. Same thin paycheck. Same worries.

I thought about Fred all day. Then that night

I saw an ad for I.C.S. It told about the job opportunities that open up with I.C.S. training. How people had found new careers and job success.

I mailed the coupon and that was the start. In just a few months my boss discovered I was an I.C.S. student. He was so pleased he decided to move me off the line. A year and two raises later I was made an assistant supervisor.

What about Fred? He's still working on the line. Still hoping for the future.

I told him about I.C.S. But so far he hasn't done anything. I guess some people never will.

How about you?

For Real Job Security-Get an I. C. S. Diploma!

I. C. S., Scranton 15, Penna.

Accredited Mumber, National Home Study Council

INTERNATIONAL CORRESPONDENCE SCHOOLS BOX 89441J, SCRANTON 15, PENNA. (Partial Ral of 258 courses) Without cost or obligation, send one "HOW to SUCCEED" and the appartunity housing about the field BEFORE which I have marked X (plus sample ferson); Caned English High School & High School S Short Size ARCHITECTURE CIVIL ENGINEERING Industrial Electronics Aero-Engineering Technology Practical Radio-TV Eng's'g Practical Telephony High School Mathematics CONSTRUCTION Aircraft & Engine Machanic Cavil Engineering High School Science Air Conditioning Construction Engineering Redio-TV Servicing BUSINESS Short Story Writing Architecture Highway Engineering Accountme LEADERSHIP Advertising Business Administration Arch. Drawing and Professional Engineer (Civil) industrial For Industrial Seconds Industrial Seconds Industrial Seconds Industrial Supervision Industrial Foremanship RAILROAD Designing Building Contractor Reading Struc, Blueprints Sanitary Engineer Car Inspector and Air Brake Industrial Supervision Business Management Diesel Electricism Diesel Engr. and Fireman Personnel-Labor Raletages Building Entimeter Cost Accounting Structural Engineering Carpenter Builder Creative Satesmanship Surveying and Mapping Diesel Locompline Carpentry and Milhwork MECHANICAL Managing a Small Business DRAFTING Carpenter Furemen Professional Secretary and SHOP Aircraft Drafting STEAM and **Heating** Diesel Engines **Public Accounting** DIESEL POWER **Architectural Drafting** Painting Contractor Gas-Eine, Walding Purchasing Agent Drafting & Machine Design Flumbing Industrial Engineering Salesmanship Power Plant Engineer **Gectrical Drafting** Reading Arch. Sheprints Salesmanship and Industrial Instrumentation Stationary Diesel Engr. Mechanical Orabin ART Management todustrial Metallurgy **Sheet Metal Drafting** Stationary Fireman Industrial Salety ☐ Traffic Management Commercial Art Singeriared Realisms Machine Shop Practice Magazine illus. CHEMICAL TEXTILE ELECTRICAL Mechanical Engineering Carding and Spinning Cutton Manufacture Cotion Warping and Weaving Leam Flaing Technician Show Card and Analytical Chemistry Clectrical Engineering Elac, Engr. Tachnician Elac, Light and Power Practical Electrician Sign Lettering Sketching and Painting Professional Engineer (Mach) Chemical Engineering Chem. Lab. Technique Quality Control Reading Shop Bleeprints AUTOMOTIVE **Elements of Nuclear Energy** Befrigeration and Textile Designing Textile Finishing & Dyning Automobile General Chemedry Air Conditioning Tool Design Tool Making Fractical Lineman Auto Body Rebuilding Natural Ges Prod. and Trans Professional Engineer (Elec) and Refinishing Petroleum Prod. and Engr. Throwing Auto Engine Tonoup HIGH SCHOOL MADIO, TELEVISION General Electronics Tech. Warping and Wneving Worsted Menufacturing Auto Engine Tun Auto Technicion Professional Engineer (Chem) Pulp and Paper Making High School Diploms Kurre **Working Hours...** A.M. to P.M. Consider retidents send coupen to International Correspondence Schools, Canadian, Ltd., Montreel, Occupation Canada. . . . Special low menthly tuition rates to members of the U. S. Armed Farces.

Reader's Digest will give

5 NEW BEST-SELLERS

for selecting all those books I've wanted to read but haven't had

LOWILL THOMAS adds: "Reader's Digest Condensed

Books make it possible to read the important books I would

JAMES MICHENER says: "Our

world today is so full of written words that men and women can

afford time for only the very best.

The best is what Reader's Digest

Condensed Books provide,"

time for.

otherwise miss."

WHY does Reader's Digest want to send you this \$2.49 volume absolutely free? Because we believe that after receiving this book together with the current Reader's Digest Condensed Book, you will want to continue getting them. But that's for YOU to judge. There is NO obligation to continue; NO MORE to pay after the first selection.

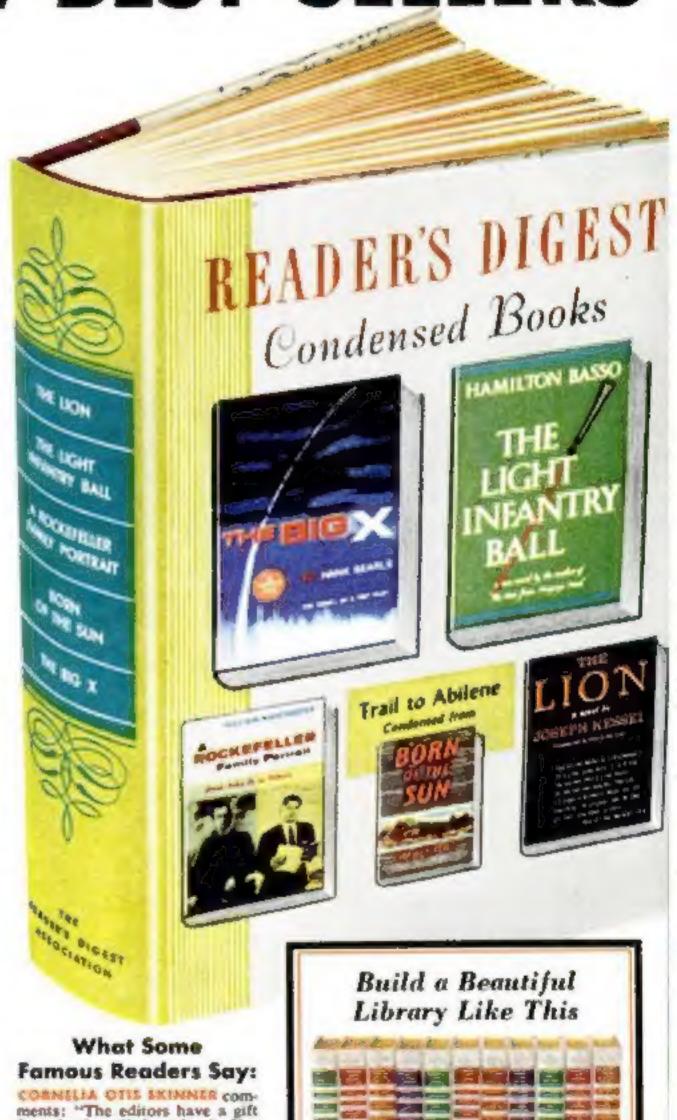
Reader's Digest Condensed Books bring you America's finest new bestsetters at only a fraction of their original prices. Every three months 4 to 6 of the best current novels, biographies and important nonfiction are skillfully condensed into a single de luxe volume of about 576 pages. None of these condensations ever appears in Reader's Digest magazine.)

The best-sellers in each volume would cost you \$18 to \$25 if bought separately in publishers' editions. But you get them all for only \$2.49 each, including all postage and handling charges.

Just send the air mail reply card for the FREE introductory volume shown on this page. With it, we will send you the current selection, for which you will be billed only \$2.49 (this includes all postage and handling charges). We will enter your name as a TRIAL member - but you need not take ANY more books unless you're delighted with your t"demonstration" package. You may cancel your membership with NO further obligation to continue - simply by telling us not to send any more books. Je If you do decide to remain a member, do nothing; later volumes will be shipped as issued, one every three months. You pay only \$2.49 for each, after delivery. And you may cancel at any time.

Send for your free book today

 Our supply of introductory books is limited. So please hurry. Just send your name and address. For your convenience, use the air mail reply card at the right. No postage stamp is needed. Tear off the card and mail it today. (This offer limited to new trial members only.) Reader's Digest Condensed Book Club, Pleasantville, N. Y.



GENUINE COLLECTORS' VOLUMES.

These handsome matched volumes-

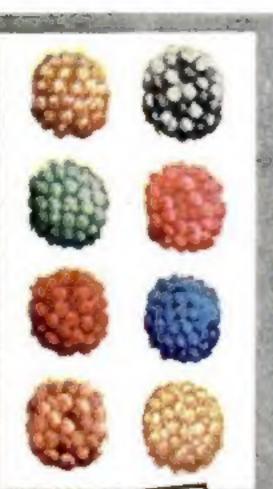
with beautiful gold-stamped bindings

and gilt-edged pages-will form an im-

pressive library you'll be proud to display in your home. The books are

illustrated in color by famous artists.

ISIT L OUR OLSON BKUADLUUM Wondertui!



OLSON DISPLAY ROOMS IN MANY CITIES ... FACTORY REPRESENTATIVES IN MANY MORE.

We'll mail you our nearest address when you write for catalog. If you wish, we can come to your home with samples in many great-or you can order by mail.



Like Millions of Olson customers

YOU, TOO, CAN SAVE UP TO 1/2

The Magic Olson Factory-to-You Way

FROM:-

YOUR

ADDRESS

TOWN

Beautiful New OLSON Rug Book in Color-FREE Rug Coupon

4-color Twend beauty

Olson Loon-Waven Way

pessible unity the

This Business Reply Mail coupon requires NO stamp or envelope. Please write name and address clearly in space provided in corner of coupon—then clip and drop in mailbox. Nothing else to do!

Write Your Name and Address — Cut Out and Mail



FIRST CLASS

Permit No. 66

Chicago, III.

"If you'll send your Old Rugs, Carpets, and Clothing at my expense, I GUARANTEE to send you the finest, longest wear 22 Broadloom Rugs or wall-to-wall Carpeting you ever had for 🐷 little money.

Walter E. Olson, Pres.

NO MATTER where you live, rush Busy ness Reply Mail coupon at left (stamp needed). Get beautiful new OLSO, Rug and Decorating Book . . . FREE . plus exciting FREE Rug Offer. Learn how valuable wool and material in old rugs carpets, clothing, is scientifically reclaimed like new, bleached and separated. Seasone wool is merged with choice NEW WOOI dyed and spun into yarn. Then we weave heavy, deep-textured, Reversible No. Broadloom Rugs or wall-to-wall Carpeting All this within a week. Double the wear and luxury.

NO RISK OFFER: Send materials at our expense. Satisfaction guaranteed. Monthly payments if you wish. Our 85th year.

LOVELY NEW COLORS, PATTERNS

Any size you want in a week-up to 18 feet wide, seamless, any length.

Smort TWEEDS Solid Colors **Embossed Effects** Early American Oriental Designs

Florals Scrolls Ovels OLSON RUG CO. Chicana New York San Francisco

Medern

Casuald

BUSINESS

STATE

NO POSTAGE STAMP NECESSARY IF MAILED IN THE UNITED STATES

Postage Will Be Paid By-

OLSON RUG CO. Dept. R-6

Catalog Division

Chicago 41, Illinois